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13. ABSTRACT ***(Maximum 200 Words)***

This report summarizes activities and accomplishments during the second year of a 4 year training program in biopsychosocial breast cancer research. Three new trainees (1 postdoctoral; 2 predoctoral) were appointed to the training program in July, 2000. Research training was furnished by a multidisciplinary faculty of six. The training program consists of 5 components, all of which were successfully implemented Specifically, training faculty and trainees participated in a monthly breast cancer seminar which allowed for oversight of trainee activities, didactic presentation of clinical aspects of breast cancer, and discussion of ongoing and anticipated breast cancer-related research projects. Trainees received supervised guidance in all phases of the research enterprise. Specifically, trainees participated in the development and implementation of three new research projects. Trainees also participated in data analysis and manuscript preparation for two additional breast cancer-related research projects. Both predoctoral trainees completed one required didactic course and enrolled in the second. Finally, trainees participated in breast clinic activities. Following review of their progress, all three trainees were reappointed to a second year of research training

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Introduction

High quality research investigating various psychosocial and behavioral aspects of breast cancer has the potential to reduce breast cancer-related mortality as well as improve quality of life following breast cancer (BC). Critical to the performance of high quality research in this area is the recruitment and training of new researchers. This report summarizes activities and accomplishments during the second year of a four year research training program in biopsychosocial aspects of (BC). The training program is centered in the Department of Behavioral Science, a basic science department in the University of Kentucky College of Medicine. A multidisciplinary training faculty of six is drawn from three academic units within the College of Medicine (Behavioral Science, Medicine-Hematology/Oncology, and Nursing). Funding is provided to support the research training of two predoctoral trainees and one postdoctoral trainee each year. Trainees engage in a variety of supervised research, experiential, and didactic activities under the supervision of training program faculty.

Body

The research training program was initiated on July 1, 1999. This report describes grant-related activities conducted during the second year of project funding from July 1, 2000 through June 30, 2001. Following is a summary of activities associated with each of the second project year tasks outlined in the approved Statement of Work.

Task 1: Implementation of Research Training Program

The training program consists of five basic components: (1) training in research design, methods, and analysis through supervised participation in BC-related research; (2) formal coursework; (3) individual tutorial in BC-related research; (4) participation in a monthly BC seminar; and (5) education regarding biological and medical aspects of BC. Each of these components was effectively implemented during project year two of the training program.

Predoctoral trainees in the program are required to complete two specific graduate level courses (component #2 from above). These include a course in "Psychosocial Oncology" and a course in "Integrated Research Methods." Both predoctoral trainees supported during project year two successfully completed the course in "Integrated Research Methods" during the spring semester of 2001. The course in "Psychosocial Oncology" is being offered during the fall semester of 2001. Both predoctoral trainees supported during project year two of the training program are enrolled in this course and will complete it this fall.

A monthly BC seminar involving both trainees and training program faculty was established (component #4 from above). Other faculty and graduate students interested in biopsychosocial BC research were also invited to attend on an ad hoc basis. This monthly seminar lasted for roughly 75 minutes each month. This seminar provided: (a) an opportunity for all members of the training program to keep abreast of the research activities of the trainees; (b) a forum for training faculty and trainees to discuss recent and ongoing research in biopsychosocial aspects of

BC; (c) an opportunity for faculty and trainees to discuss ideas leading to the development of new BC-related research projects at the University of Kentucky; and (d) an opportunity for didactic instruction regarding medical and clinical aspects of BC.

Education regarding biological and medical aspects of BC was provided through both didactic instruction and experiential activities (component #5 from above). The monthly seminar provided an opportunity for trainees (and program faculty) to learn basic medical information regarding BC. A series of four didactic lectures were presented which provided an overview of the following general topics: epidemiology, detection, diagnosis and staging, treatment, and BC genetics. Lectures were given by the two members of the training program faculty possessing M.D. degrees, Drs. Munn and Wadhwa. Each lecture lasted 60-75 minutes. In addition, all trainees participated in various experiential activities. These included attendance at twice weekly integrative patient conferences conducted by the University of Kentucky Comprehensive Breast Care Center as well as "shadowing" of clinicians and BC patients as they are involved in the provision and receipt of medical treatment of BC.

During project year two of the training program, both pre- and postdoctoral research trainees were actively involved in specific research projects under the supervision of training program faculty (component #1 from above). Research projects were either "communal" projects in which all trainees participated or were "individual" research projects which were developed and implemented largely by a single trainee. During project year two of the training program, two new communal research projects were developed and implemented. These included: (a) a prospective and longitudinal study of fatigue during and following treatment for breast cancer; and (b) a psychosocial needs assessment of women being seen at the University of Kentucky Comprehensive Breast Care Center. Trainee involvement in these two ongoing research projects ranged across several phases of the research enterprise including research protocol development, preparation of requests for approval for use of human subjects, data collection, and data entry and preparation. . In addition to these two ongoing communal research projects, pre- and post-doctoral trainees participated in data analysis and manuscript preparation activities associated with two completed breast cancer-related research projects. These included: (a) a longitudinal study of women's psychological and behavioral responses to the experience of a benign breast biopsy; (b) a cross-sectional laboratory-based study of emotional expressivity in BC survivors and age- and education-matched women without a history of breast cancer.

Finally, one additional individual research project was also implemented during project year two of the training program. John Schmidt, a predoctoral trainee, developed and implemented a web-based study of dispositional and social factors in psychological adjustment to breast cancer diagnosis and treatment. In this project, Mr. Schmidt assumed full responsiblity for all aspects of development and implementation, thus providing him with supervised experience in all aspects of the research endeavor.

Task 2: Recruitment of Research Trainees for Project Year 3

All three research trainees supported during project year two of the training program were new appointees and began their initial year of appointment in July, 2000. Review of the initial progress of all three trainees by training program faculty indicated that all three trainees were evidencing satisfactory progress and were meeting training program objectives. All three trainees were interested in continuing in the training program and sought reappointment to a second year of research training. Additionally, the training program faculty agreed that more than one year of research training is necessary to derive maximal benefit from the training program. As a result, all three trainees were reappointed to a second year as a research trainee. All three trainees began their second year of research training on July 1, 2001.

Key Research Accomplishments During Project Year Two

- Appointment and training of two new predoctoral trainees (Schmidt, Bollmer) during project year two
- Appointment and training of new postdoctoral trainee (Beacham) during project year two
- Two manuscripts accepted for publication in peer-reviewed journals based upon research conducted in association with training grant (Andrykowski et al., in press; Mager and Andrykowski, in press)
- One manuscript submitted for publication in peer-reviewed journal based upon research conducted in association with training grant (Andrykowski et al., 2001)
- Publication of two abstracts based upon research conducted in association with training grant (Bollmer et al., 2001; Schmidt et al., 2001)
- Implementation of three new breast-cancer related research projects
- Successful implementation of all five components of training program

Reportable Outcomes

(Note that all outcomes listed below are only those occurring during project year two and include only those outcomes associated with trainees supported during project years one or two. Names of trainees are in bold.)

Manuscripts published in peer-reviewed journals:

Andrykowski, M.A., Carpenter, J.S., Studts, J.L., Cordova, M.J., Cunningham, L.J., **Mager, W.M.**, Sloan, D., Kenady, D., & McGrath, P. (in press). Adherence to recommendations for clinical follow-up after benign breast biopsy. Breast Cancer Research and Treatment.

Mager, W.M., & Andrykowski, M.A. (in press). Communication in the cancer "bad news" consultation: Patient perceptions and psychological adjustment. Psychooncology.

Manuscripts submitted for editorial review to peer-reviewed journals:

Andrykowski, M.A., Carpenter, J.S., **Studts, J.L.**, Cordova, M.J., Cunningham, L.J., **Beacham, A.**, Sloan, D., Kenady, D., & McGrath, P. (2001). Psychological and behavioral sequelae of benign breast biopsy: A longitudinal, comparative study. (Submitted to Health Psychology)

Published Abstracts:

Bollmer, J.M., Schmidt, J.E., Blonder, L.X., & Andrykowski, M.A. (2001). Emotional expression in women with breast cancer: A comparative study. [abstract] Annals of Behavioral Medicine, 23 (Suppl.), S078.

Schmidt, J., Bollmer, J., Blonder, L., & Andrykowski, M.A. (2001). Development of a behavioral approach to assessing emotional expression. [abstract] Annals of Behavioral Medicine, 23 (Suppl.), S173.

Degrees obtained based on training supported by award:

Jamie Studts, Ph.D., a predoctoral trainee during project year one completed the requirements for his Ph.D. degree in Clinical Psychology from the University of Kentucky in June, 2001.

Employment opportunities received based on training supported by award:

Jamie Studts, M.S., a predoctoral trainee during project year one, was appointed as an assistant professor in the Department of Internal Medicine and the James Graham Brown Cancer Center at the University of Louisville. His appointment began July 16, 2001.

Conclusions

Three new trainees (two predoctoral and one postdoctoral) were appointed at the beginning of project year two of the training program. Each of the five components of the research training program was effectively implemented during project year two of the training program. All three trainees received supervised, "hands on" experience in all aspects of conducting biopsychosocial breast cancer-related research. In addition, all three trainees had the opportunity to participate in a variety of specific research projects, thus increasing the breadth of their experience. Finally, all three trainees had the opportunity for extensive interaction with both patients and health providers in the breast cancer care setting. Following review of the progress and activities of the three research trainees by training program faculty, it was decided to reappoint each to a second year of research training beginning July, 2001.

References

Andrykowski, M.A., Carpenter, J.S., **Studts, J.L.**, Cordova, M.J., Cunningham, L.J., **Beacham, A.**, Sloan, D., Kenady, D., & McGrath, P. (2001). Psychological and behavioral sequelae of benign breast biopsy: A longitudinal, comparative study. (Submitted to Health Psychology)

Andrykowski, M.A., Carpenter, J.S., Studts, J.L., Cordova, M.J., Cunningham, L.J., Mager, W.M., Sloan, D., Kenady, D., & McGrath, P. (in press). Adherence to recommendations for clinical follow-up after benign breast biopsy. Breast Cancer Research and Treatment.

Bollmer, J.M., Schmidt, J.E., Blonder, L.X., & Andrykowski, M.A. (2001). Emotional expression in women with breast cancer: A comparative study. [abstract] Annals of Behavioral Medicine, 23 (Suppl.), S078.

Mager, W.M., & Andrykowski, M.A. (in press). Communication in the cancer "bad news" consultation: Patient perceptions and psychological adjustment. Psychooncology.

Schmidt, J., Bollmer, J., Blonder, L., & Andrykowski, M.A. (2001). Development of a behavioral approach to assessing emotional expression. [abstract] Annals of Behavioral Medicine, 23 (Suppl.), S173.

Appendix

Four publications have resulted from training program activities at the time of this writing. These include two manuscripts accepted for publication in peer-reviewed scientific journals (Andrykowski et al., in press; Mager & Andrykowski, in press) and two published abstracts (Bollmer et al., 2001; Schmidt et al., 2001). Copies of these four publications have been included in the appendix to this report. An additional manuscript based upon research resulting from training program activities has been submitted for publication in a peer reviewed scientific journal and is undergoing editorial review at the time of this writing (Andrykowski et al., 2001). Should this manuscript be accepted for publication, a copy will be included in future annual reports.

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PATIENT SATISFACTION WITH MULTIDISCIPLINARY CANCER CLINICS: EFFECT OF PSYCHOSOCIAL CARE

Mark S. Walker, Ph.D. and Steven L. Ristvedt, Ph.D., Washington University School of Medicine

Integrating routine psychosocial services into multidisciplinary cancer clinics may enhance patients' satisfaction with medical care, and help reduce the emotional burden of their illness. This study examined the effect of mental health services in the satisfaction of newly diagnosed cancer patients prior to full integration of routine psychosocial care. Fifty-eight cancer patients (40% female, mean age = 60) were surveyed two months following diagnosis, and rated their satisfaction with their clinic visits on a 5-point scale (1-very unsatisfied, 5-very satisfied). Other survey items assessed the professional disciplines seen, whether patients had a chance to talk about their feelings, and the attention paid by staff to the emotional aspects of their illness. Multiple regression analysis showed that overall satisfaction was predicted by younger age, female gender, and greater attention to how patients were coping with their illness (R-squared = .36, $p < .0001$). Overall, 31% of patients saw a mental health professional, but this was not significantly correlated with patients' ratings of attention to coping, having an opportunity to talk about their feelings, or overall satisfaction with their clinic visits. The absence of such an effect may reflect a referral bias in which only the more distressed patients receive a mental health visit at this early stage of service development. However, results suggest the importance of routine attention to patients' coping even in the absence of integrated or extensive psychosocial support services. These results will be employed as a baseline for future evaluation of patient satisfaction, and of the effect of psychosocial services.

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A MEASUREMENT TOOL FOR ASSESSING KNOWLEDGE OF OVARIAN CANCER RISK FACTORS

Jamie L. Studts, M.S., Edward J. Pavlik, Ph.D., and Michael A. Andrykowski, Ph.D., University of Kentucky College of Medicine

Cancer risk education is an integral part of public health education efforts. It is widely believed that risk factor knowledge contributes to decisions regarding participation in cancer screening and prevention programs. The purpose of this study was to evaluate a 14-item questionnaire devised to assess knowledge of ovarian cancer risk factors. Items were developed based on ovarian cancer risk factors described in the literature. Respondents were asked to indicate whether each factor increased risk, decreased risk, or was unrelated to risk. A "don't know" option was also provided. Items were scored as correct or incorrect with higher scores indicating greater knowledge. Three rationally-derived subscales are proposed: (1) familial/genetic factors; (2) hormonal factors; and (3) behavioral factors. Data was collected from 609 female participants preparing to undergo ultrasound screening for ovarian cancer and 102 age- and education-matched screening naive controls. Participants were predominantly Caucasian (98%), married (67%), high school educated (42%), and were an average age of 60 years (SD = 11). Results of a factor analysis suggested a three-factor solution explaining 31% of the variance. The pattern of factor loadings largely validated the rationally-derived subscales with 12 of 14 items loading as hypothesized. Internal consistency for the three subscales was reasonable for dichotomously-scored items (alpha's=.52-.62). This preliminary exploration of psychometric properties suggests that this instrument may be useful in evaluating the efficacy of cancer risk education efforts and exploring the impact of cancer risk knowledge on participation in cancer screening and prevention programs.

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DECISION-MAKING ABOUT TAMOXIFEN: A NEW TREATMENT FOR WOMEN AT HIGH RISK FOR BREAST CANCER

Sharon L. Bober, Ph.D., Lizbeth A. Hoke, Ph.D., Nadine M. Tung, M.D., and Rosemary B. Duda, M.D., Beth Israel Deaconess Medical Center / Harvard Medical School

This paper presents initial results of an on-going study examining decision-making about tamoxifen with healthy women who are at high risk for breast cancer. Women at high risk for breast cancer now have the option to take tamoxifen, a cancer preventive drug that may significantly reduce their risk of breast cancer. However, tamoxifen use also increases other health risks such as endometrial cancer, blood clots and cataracts. Thus, high risk women now have available a treatment that demands a complex trade-off between risks and benefits. The aim of this study is to begin identifying cognitive, affective and context variables underlying this decision and to examine factors that affect satisfaction with treatment decision. Women who are eligible to take tamoxifen complete a packet of questionnaires and then participate in follow-up telephone interviews, 2, 4 and 12 months later, in order to assess treatment decision and satisfaction. Currently 68 women have enrolled in the study and 49 women have completed questionnaires (72%). Thirty-one women have currently completed initial follow-up phone interviews. Participants are ages 40–70 (M= 49.2, SD = 6.3). Of the women who have participated in follow-up interviews, 16 have decided to take tamoxifen (52%) and 9 have decided against treatment (29%) and 6 are still undecided (19%). That is, almost half of the women who have received a physician recommendation for tamoxifen have decided against treatment. Initial results using logistic regression analyses reveal that women who have more depressed affect, more anxiety and a less optimistic outlook appear more likely to take tamoxifen. These preliminary findings raise interesting questions about why women are choosing to take tamoxifen. This study represents a first step toward understanding the challenges that high risk women face, and developing an effective psycho-educational intervention that will help women make fully-informed, satisfying treatment decisions.

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EMOTIONAL EXPRESSION IN WOMEN WITH BREAST CANCER: A COMPARATIVE STUDY

Julie M. Bollmer, M.A., John E. Schmidt, B.S., Lee X. Blonder, Ph.D., and Michael Andrykowski, Ph.D., Department of Behavioral Science, University of Kentucky College of Medicine

This study investigated differences in emotional expression (EE) between women with breast cancer (BC) and women in a healthy comparison (HC) group. Women in the HC group (n = 25) were matched to those in the BC group (n = 25) on the basis of age (M = 57.36) and education (M = 15.02 years). Participants completed the Emotional Expressiveness Questionnaire, the Spielberger Rationality/Emotional Defensiveness Questionnaire, the Courtald Emotional Control Scale, and the CESD. Participants were randomly assigned to discuss either a traumatic or joyful event in their past, and this disclosure task was videotaped and later coded by trained raters on several EE dimensions. Lastly, participants evaluated the disclosure task. Analyses revealed that women with BC displayed greater intensity of emotion in the disclosure task than healthy women ($p = .03$). Women with BC also expressed more negativity in the disclosure task overall ($p = .08$). However, there were no differences between the women regarding dispositional measures of EE or levels of current adjustment. Furthermore, the women disclosed stories that were equally personal and coherent, and evaluated the disclosure task similarly, except women with BC reported previously discussing their topics more than healthy women ($p = .05$). These findings contrast with the notion of the Type C personality, which would predict that women with BC would be less emotionally expressive than healthy women. While inhibited EE might yet serve as a risk factor for BC, BC might alter women's EE tendencies and behavior.

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E-60 Citation

SYNDROME X MEDIATES THE RELATIONSHIP BETWEEN CYNICAL HOSTILITY AND CARDIOVASCULAR DISEASE: A PROSPECTIVE STUDY

Tracy L. Nelson, Ph.D., M.P.H., Colorado State University; Raymond F. Palmer, Ph.D., The University of Texas Health Science Center at San Antonio; and Nancy L. Pedersen, Ph.D., Karolinska Institute, Stockholm

A consistent association between cynical hostility and cardiovascular disease (CVD) has been well documented. While studies demonstrating the mechanism for this association are sparse, evidence from a wealth of cross-sectional studies suggest that this association might be explained by exaggerated sympathetic-adrenal-medullary tone. In this study, the clustering of classic CVD risk factors, known as syndrome X (e.g. hypertension, hyperinsulinemia, hypertriglyceridemia and abdominal fatness), was tested as a mediator of the association between cynicism and CVD. Data from the Swedish Adoption/Twin Study of Aging (SATSA) (n = 1620, average age 67 years, 59% female) was used to study this relationship longitudinally. The direct effect of cynicism (measured in 1984) on CVD (measured in 1990) was significant (beta = .008, standard error=.003, p<.004). In a second model, syndrome X (measured from 1986–88 and represented by a latent construct with triglycerides, systolic blood pressure, insulin, and waist-hip ratio as indicators), significantly mediated this relationship. Cynicism was significantly associated with syndrome X (beta = .015, standard error=.004, p<.000), and syndrome X was significantly associated with CVD (beta = .314, standard error=.097, p<.001). The direct effect of cynicism on CVD in this second model was no longer significant. These results persisted after adjusting for baseline CVD, cigarette smoking, and alcohol consumption. These findings suggest that syndrome X mediates the association between cynicism and CVD in an older population.

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SELF-EFFICACY, EXERCISE AND SOCIAL SUPPORT IN OLDER ADULTS

Edward McAuley, Ph.D., David X. Marquez, M.S., Gerald J. Jerome, M.S., University of Illinois, and Bryan Blissmer, Ph.D., University of Rhode Island

Although self-efficacy is acknowledged as an important predictor of physical activity behavior, few efforts have addressed how efficacy changes over time and what might influence such change. A randomized controlled trial examined the effects of two exercise modes (walking, stretching/toning) on self-efficacy to overcome barriers in older adults (M age = 65 years; N = 174) over a 6-month period. In addition, it was of interest to determine the role played by social, fitness, and participation variables in self-efficacy at program end. The sample was predominantly white, healthy, and female and were randomized to an exercise mode and completed a 6-month exercise program. Self-efficacy was measured at baseline, 2, 4, and 6 months. Maximal graded exercise tests prior to and following the program assessed changes in fitness (time on treadmill, VO2max). Social support was measured with the Social Provisions Scale. Repeated measures analyses showed a significant effect for time with barriers efficacy following a curvilinear pattern. That is efficacy increased from baseline to two month and then declined to below baseline prior to the end of the program. There were no differential effects for exercise condition. Hierarchical multiple regression analyses revealed significant effects for social support (R2 = .12) and exercise participation (R2 = .06), and a non significant effect for time on treadmill (R2 = .02, p<.10). The overall model was significant, R2adj =.21, p<.0001). These findings suggest that self-efficacy is malleable and is determined, in part, by mastery experiences, social influences, and physiological change as suggested by social cognitive theory.

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PERFORMANCE-BASED MEASUREMENT OF MEDICATION MANAGEMENT: FINDINGS WITH OLDER SCHIZOPHRENIA PATIENTS

T.L. Patterson, Ph.D., J. Lacro, Parm.D., C.L. McKibbin, Ph.D., S. Moscona, and D.V. Jeste, M.D., University of California, San Diego and San Diego VA Medical Center

Self report measures of medication adherence have been criticized on a number of grounds. We describe a performance based measure of medication management, the Medication Management Ability Assessment (MMAA). Subjects were over the age of 45: 104 schizophrenia or schizoaffective patients, and 33 normal controls. Subjects participated in a role-play task (MMAA) which simulated a prescribed medication regimen, similar in complexity to one which an older person is likely to be exposed to. MMAA test-retest reliabilities were excellent (intraclass correlation .96). Patients demonstrated significantly more errors in medication management compared to normal subjects. Significantly more patients were classified as being non-adherent (i.e., taking +/– 5%, 10%, 15%, or 20% of prescribed pills), than normal controls. Patients, who had more negative symptoms and had more cognitive deficits performed more poorly on the MMAA. Performance was significantly related to prescription refill records, performance based measures of everyday functioning, and self-reported quality of life. The MMAA is a useful measure for assessing a patient's ability to adhere to medications.

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DEVELOPMENT OF A BEHAVIORAL APPROACH TO ASSESSING EMOTIONAL EXPRESSION

John Schmidt, B.S., Julie Bollmer, M.A., Lee Blonder, Ph.D., and Michael Andrykowski, Ph.D., Department of Behavioral Science, University of Kentucky College of Medicine.

Emotional Expression (EE) is critical to trauma adjustment and is viewed as a risk factor for certain diseases. Standard techniques for assessing EE rely on self-report. This study tests a behavioral approach to assessing EE. Fifty women (mean age=60) were randomly assigned to talk about an emotionally positive or negative event in their past. Subjects talked for 20 minutes while being videotaped. The transcribed videotapes were scored using 2 methods: Pennebaker's Linguistic Inquiry and Word Count (LIWC) system and emotional intensity ratings provided by trained raters. Subjects completed measures of EE (EEQ), alexythymia (TAS), and mental health (CESD, MOS-36 subscale) prior to the behavioral task. Results indicated EEQ (r=.42; p<.01) and TAS scores (r=–.43; p<.01) were significantly related to emotional intensity ratings in the total sample. Both EEQ (r=.18; p>.05) and TAS (r=–.23; p>.05) scores were unrelated to LIWC Affect scores. Emotional intensity ratings and LIWC Affect scores were not significantly associated with CESD or MOS-36 Mental Health scores suggesting current mental health did not influence performance. Post-task ratings indicated S's found the behavioral task slightly difficult (mean=2.9 on 7-point scale) and highly revealing emotionally (mean=5.7). T-tests indicated S's in the positive condition found the task to be more uplifting and less stressful than S's in the negative condition (all p's < .05). Transcripts of S's in the negative condition were rated as more coherent which may stem from a greater tendency to ruminate about negative events. It is concluded that this behavioral approach to EE assessment is acceptable to S's and captures EE tendencies.

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Adherence to Recommendations for Clinical Follow-up After Benign Breast Biopsy

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RUNNING HEAD: Adherence After Benign Breast Biopsy

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This research was supported by a predoctoral research training grant from the Department of Defense Breast Cancer Research Program and a postdoctoral research training grant from the National Institute of Mental Health

Abstract

PURPOSE: Women who undergo a benign breast biopsy are at elevated risk for the subsequent development of breast cancer (BC). Therefore, appropriate clinical follow-up of a benign breast biopsy is important. The present study examines the extent and correlates of nonadherence with follow-up recommendations after a benign breast biopsy.

METHODS: Women (n=114) who had undergone a benign breast biopsy completed an initial telephone interview within 50 days of their biopsy (mean=21 days). Additional telephone interviews were completed at four and eight months post-biopsy. Measures of BC risk perception, general and BC-specific distress, BC-related attitudes and beliefs, social support, optimism, and informational coping style were completed. Specific recommendations for clinical follow-up and evidence of actual follow-up were obtained from medical records.

RESULTS: Of 103 women given a specific recommendation for clinical follow-up, 34% were classified as nonadherent with follow-up recommendations. Logistic regression analyses indicated that nonadherent women were characterized by younger age, recommendations for follow-up by clinical breast examination alone, greater confidence in their ability to perform breast self-examination properly, higher perceived personal risk for BC, and greater BC-specific distress.

CONCLUSION: Despite the importance of appropriate clinical follow-up of a benign breast biopsy, about one-third of women did not adhere to recommended follow-up. Risk factors for nonadherence suggest potential avenues for interventions to enhance participation in appropriate clinical follow-up.

Key Words: Adherence, Biopsy, Breast Cancer, Clinical Follow-up, Compliance, Psychosocial,

Early detection and diagnosis of female breast cancer is associated with significant reductions in disease-related mortality [1-4]. To facilitate early detection and diagnosis, women are advised and encouraged to participate, as appropriate, in routine breast cancer screening activities such as mammography and clinical breast examination (CBE).

While the potential benefits of breast cancer screening have been demonstrated, some drawbacks exist. It has been estimated that routine mammography screening for breast cancer yields an "abnormal" result (i.e., suspicious or inconclusive) about 20% of the time [5-6]. Additionally, CBE may yield an abnormal result, even when mammogram results are normal. The vast majority of these abnormal results are not indicative of a malignant lesion but rather stem from asymmetries in breast tissue or structure, benign cysts or masses, or greater mammographic density attributable to age or use of hormone replacement therapy in postmenopausal women [7]. Typically, such abnormal results are followed by a repeat mammogram or by recommendations for additional clinical follow-up in 3-6 months. In some cases, however, an abnormal screening result requires performance of a biopsy procedure to distinguish malignant from benign breast disease. Diagnostic breast biopsy procedures include fine needle aspiration (FNA), core needle biopsy, or excisional breast biopsy. Approximately 20% of all diagnostic breast biopsy procedures produce a positive diagnosis of breast cancer. In the overwhelming majority of women the biopsy yields a diagnosis of benign breast disease.

Although a breast biopsy may not reveal a malignancy, some data suggests that women undergoing breast biopsy for benign breast disease are at elevated risk for subsequent development of breast cancer [8-12]. As a result, appropriate clinical follow-up of a benign breast biopsy is important. While consensus may not exist regarding what exactly constitutes

appropriate clinical follow-up for these women, some combination of screening mammography and/or CBE within the ensuing 4-6 months is typically recommended.

Despite its potential significance no research has examined the extent of adherence to recommendations for clinical follow-up after a benign breast biopsy. Several lines of reasoning suggest that adherence in this setting might be less than optimal. First, it is well known that significant numbers of individuals fail to adhere to recommendations for participation in routine cancer screening activities [13-15]. Second, research in other cancer screening settings suggests that nonadherence to recommendations for clinical follow-up after being informed of an abnormal cancer screening result is common [16-21]. For example, it is estimated that up to 40% of women with an abnormal Papanicolau (Pap) test result fail to adhere to recommendations for follow-up biopsy or colposcopy [17]. Similarly, in a study of a large breast cancer screening program, 18% of women with abnormal mammogram results received inadequate follow-up [19]. Third, several studies have shown that the biopsy experience is associated with considerable anxiety. Significantly elevated levels of distress have been found in women either awaiting the biopsy procedure [22-27] or awaiting notification of biopsy results [28]. If persistent, such anxiety might interfere with a woman's motivation to adhere to follow-up recommendations [29]. Finally, some evidence suggests that the experience of benign breast biopsy might impact a woman's practice of other cancer screening behaviors [30-31]. Specifically, Janz et al. [31] found that practice of BSE was altered following the experience of a benign breast biopsy. Women whose lump was detected during routine mammography were likely to increase BSE practice while women whose lump was self-discovered were likely to decrease BSE practice. Similarly, Haefner et al. [30] found that women who had practiced BSE

regularly prior to experience of a benign biopsy were more likely to reduce their practice of BSE. Women who had not practiced BSE regularly prior to biopsy were more likely to increase their practice of BSE.

Thus, while the existing literature suggests that a benign breast biopsy can be a distressing experience for many women, the impact of the biopsy experience upon subsequent participation in cancer screening activities is unclear. In particular, the extent of nonadherence with recommendations for clinical follow-up is unknown. The purpose of the present study is to examine the extent of nonadherence to recommendations for clinical follow-up after a benign breast biopsy. In addition to documenting the extent of nonadherence, the present study seeks to identify demographic, clinical, and psychosocial variables associated with risk for nonadherence.

Patients and Methods

Patients

Eligible women were identified in a consecutive series from the daily roster of patients seen at the University of Kentucky Comprehensive Breast Care Center. To be eligible for study participation, a woman must have met the following criteria: (a) $\geq$ 18 years of age; (b) scheduled to undergo or have recently undergone a breast biopsy or FNA for diagnostic purposes; (c) no prior history of breast biopsy or FNA; (d) receipt of benign results following their breast biopsy or FNA; (e) be able to read, write, and understand English; and (f) provide written informed consent for participation.

Using these criteria, 143 women were identified as study eligible during an 11 month

period between December, 1996 and November, 1997. Of these, 129 (90%) provided written informed consent for study participation. Of the 14 women who declined study participation, most cited being "too busy" or "too stressed" as the reason. Seven women who consented to study participation were subsequently diagnosed with a breast malignancy and were thus ineligible for further study participation. Additionally, three women failed to complete the initial telephone interview at all and five women did not complete the initial telephone interview within 50 days of their breast biopsy or FNA. These eight women were also dropped from the study. The final study sample therefore consisted of 114 women who completed the initial telephone interview within 50 days of study entry (84% of all study eligible women and 93% of eligible women consenting to participate). These women were a mean of 43.8 years of age (SD=14.0; range=19 to 84 years) at the time of the initial interview. They completed the initial telephone interview a mean of 21 days following their breast biopsy or FNA (SD= 9.9; range=2 to 47). The majority of women in the study sample underwent a breast biopsy (n=70; 61%), while the remainder underwent an FNA (n=37; 33%) or underwent an FNA followed by breast biopsy (n=7, 6%).

The majority of the study sample was Caucasian (n=96; 84%). The remainder of the sample identified their race as either African American (n=15; 13%) or "other" (n=3; 3%). The mean number of years of education completed was 13.7 (SD=2.9; range=6 to 20 years). Marital status was as follows: single, never married (n=13; 11%), divorced or separated (n=17; 15%), married (n=76; 67%), widowed (n=5; 4%), or cohabitating (n=3; 3%). Annual household income was as follows: < $20,000 (n=43; 38%), $20,000 - $40,000 (n=22; 19%), $40,000 - $60,000 (n=18; 26%), and > $60,000 (n=27; 24%). Four women (3%) did not provide information

regarding annual income. Health or medical insurance coverage was as follows: Medicare/Medicaid (n=22; 19%); private third party insurance (n=28, 25%); HMO or PPO (n=50; 44%); no health or medical insurance (n=14, 12%).

Twenty-three women (20%) had at least one first degree biological relative (FDR) with a history of breast cancer (n=19 with one FDR and n=4 with 2 FDR's). Mean relative risk for breast cancer [32] in the study sample was 3.00 (SD=1.5; range=1.4 to 10.1) while mean absolute lifetime risk for breast cancer [33] was 10.6% (SD=5.0%; range=2.7 to 34.2%).

Procedure

All study procedures were performed in accordance with current ethical standards for the responsible conduct of human research and were approved by the local institutional review board.

Study eligible women were identified in a consecutive series from the daily clinic roster of the University of Kentucky Chandler Medical Center. Prior to undergoing a benign breast biopsy or FNA, eligible women were introduced to the study by the physician managing her care. Women interested in study participation were then given a detailed explanation of the study by a member of the project research staff. Project research staff were not involved in the woman's medical care. Written informed consent for study participation was then obtained. Following receipt of biopsy or FNA results, women whose biopsy or FNA yielded benign findings were telephoned by a member of the project research staff and a time for the Initial Telephone Interview scheduled. The Initial Telephone Interview, conducted some time after the woman was notified of her biopsy results, required 20-40 minutes to complete. Additional Follow-up Telephone Interviews were completed four and eight months following a woman's biopsy or

FNA procedure. Each of the Follow-up Interviews required 15-25 minutes to complete. Finally, twelve months following a woman's biopsy or FNA, information was abstracted from each participant's medical record including specific recommendations for clinical follow-up, actual participation in follow-up CBE or mammography, and number and nature of interval problems and clinic visits during the past twelve months following the benign biopsy or FNA procedure.

Assessment protocol

During the Initial Telephone Interview, all women completed a set of questionnaires designed to assess: (a) demographic and breast cancer risk variables; (b) events surrounding the biopsy/FNA; (c) dispositional/personality variables; (d) general and breast cancer-specific distress; (e) current social support; (f) breast cancer-related attitudes, beliefs, and behaviors; and (g) subjective breast cancer risk. At the Four and Eight Month Follow-up Interviews, all women again completed portions "d" and "g" of the assessment protocol described above and were asked whether or not they had undergone CBE or mammography since their last study interview. If they had, they indicated where and when they had undergone these screening procedures. While all women participated in a total of three telephone interviews following receipt of their biopsy results (i.e., Initial Interview, Four Month and Eight Month Follow-up Interviews) the remainder of this report utilizes only the data obtained at the Initial Telephone Interview.

Demographic and Breast Cancer Risk Variables. Demographic information obtained included current age, race, marital status, educational level, and annual household income. In addition, information regarding risk factors for breast cancer, including age at menarche, parity, prior history of breast biopsy, and number of FDR's with breast cancer, was obtained.

Events Surrounding the Biopsy/FNA. All women were asked how they were notified of

their biopsy or FNA results (telephone, letter, in-person; nurse or MD), whether they were told anything about their personal risk for breast cancer (nothing vs. lower, the same, or higher than the typical woman), what type of medical insurance they possessed (private fee for service, HMO, public, or none) and how satisfied they were with the medical care they received during their biopsy/FNA experience. Satisfaction ratings were obtained on an 10 point Likert scale with one endpoint "not at all satisfied" and the other endpoint "completely satisfied."

Dispositional Variables. Specific measures included the Short Form of the Miller Behavioral Styles Scale (MBSS-SF; [34]), a measure of informational coping style, and the Life Orientation Test (LOT; [35]), a measure of dispositional optimism.

General and Breast Cancer-Specific Distress. These included the Profile of Mood States-Short Form (POMS-SF; [36]), a measure of current, general distress, the Center for Epidemiologic Studies Depression Scale (CESD; [37]), a measure of current depressive symptoms, and the Impact of Events Scale (IES; [38]), a measure of current intrusive ideation and avoidance regarding a specified stressor. In the present study, women were asked to respond to the IES with regard to the stressor "the possibility that you will develop breast cancer in your lifetime." As such, the IES served as a measure of breast-cancer specific distress.

Current Social Support. Women completed the Duke-UNC Functional Social Support Questionnaire (DUKE-SSQ; [39]), a measure of affective social support.

Breast Cancer-Related Attitudes and Beliefs. Information regarding breast cancer-related attitudes and beliefs was obtained from all women. Women were queried regarding their confidence in their ability to practice BSE correctly (four response options ranging from "not at all" to "definitely"), anxiety experienced while performing BSE (four response options ranging

from "none" to "definite"), and anxiety about the results of future mammograms (four response options ranging from "not at all" to "a lot") and whether they would like to be taught how to better perform BSE (yes vs. no). Additional questions used in previous research included whether a woman could have breast cancer without having symptoms or feeling ill (yes vs. no), whether mammograms can find breast cancer early, and whether breast cancer can be cured if found early (four response options for both items ranging from strongly disagree to strongly agree) [40-41].

Subjective Breast Cancer Risk. Two subjective estimates of lifetime risk for breast cancer were obtained. Women provided an estimate of perceived personal lifetime risk for breast cancer by providing a percentage between 0-100% in response to the question "What are the chances that you will develop breast cancer some day?" (PERSONAL BC RISK). Second, women provided an estimate of typical lifetime risk for breast cancer by providing a percentage between 0-100% in response to the question "What are the chances that the average woman your age will develop breast cancer some day?" (TYPICAL BC RISK).

Objective Breast Cancer Risk. Two objective estimates of lifetime risk for breast cancer were computed. For each woman, information regarding age, age at menarche, parity, prior history of breast biopsy (none in all cases here), and number of FDR's with breast cancer was obtained. Using established algorithms, this information was used to estimate both relative [32] and lifetime [33] risk for breast cancer.

Categorization of Adherence/Nonadherence With Follow-Up Recommendations

Each woman's adherence with clinical recommendations for follow-up CBE was classified into one of three categories: adherent, nonadherent, or not applicable. Adherence with

recommendations for follow-up mammography was also classified as adherent, nonadherent or not applicable. The "not applicable" category was used when no evidence of recommendations for follow-up CBE or mammography was found in the woman's medical record. Otherwise, a woman was categorized as either "adherent" or "nonadherent" with follow-up recommendations based upon comparison of recommendations for follow-up CBE or mammography found in her medical record to evidence of participation in CBE or mammography during the 12 months following benign biopsy or FNA, also found in her medical record. Specifically, if a recommendation for mammography was found in the medical record, a woman was categorized as "adherent" with mammography recommendations if the medical record also contained evidence of participation in mammography during the 12 months following benign biopsy or FNA. If a recommendation for mammography was found in the medical record, but her medical record contained no evidence of participation in follow-up mammography during the ensuing 12 months, a woman was tentatively categorized as "nonadherent." For women tentatively categorized as "nonadherent", responses to questions from the Four and Eight Month Follow-Up Telephone Interviews regarding recent participation in mammography were examined. If a woman reported during the Follow-Up interviews that she had not participated in follow-up mammography since her biopsy or FNA procedure she received a final categorization as "nonadherent." Otherwise, if the woman indicated during the Follow-Up telephone interviews that she had recently participated in follow-up mammography, either at the University of Kentucky Comprehensive Breast Care Center or at a different clinic facility, she automatically received a final categorization of "adherent" with follow-up mammography recommendations. For women receiving a recommendation for follow-up CBE, identical procedures were employed

to categorize them as either adherent or nonadherent with follow-up CBE recommendations. Based upon these separate classifications of adherence with recommendations for mammography and CBE, an overall classification of adherent or nonadherent with follow-up recommendations was then made. Women classified as nonadherent with either CBE or mammography recommendations (or both) were classified as nonadherent. All remaining women were classified as adherent.

Concordance between women's self-reports of participation in CBE and mammography following the biopsy or FNA procedure and actual clinic records was quite high. With regard to CBE, women's self reports obtained during the Four and Eight month Follow-Up Interviews were in complete agreement with clinic records for 95% of women. For only four women, self report of participation in CBE was not supported by documentation in her medical record. All of these women indicated that they had undergone CBE at another clinic facility (these women were categorized as adherent; see above). With regard to mammography, women's self reports were also in complete agreement with clinic records for 95% of women. No woman reported participation in mammography which was not documented in the medical record. However, three women failed to report participation in follow-up mammography which was documented in their clinic record (these women were categorized as adherent; see above). Finally, it should be noted that several (n=3) women who were classified as "adherent" with follow-up recommendations participated in CBE or mammography but not during the clinically recommended time frame. Specifically, several women given recommendations for follow-up CBE and mammography in six months actually underwent follow-up 8-10 months following their benign biopsy or FNA. Rather than classifying these women as nonadherent, these three

women were given the benefit of the doubt and were classified as adherent.

Statistical Analyses

Total scores were computed for the LOT, POMS, CESD, IES, and DUKE-SSQ using standard scoring procedures. Subscale scores on the POMS and the MBSS-SF were also computed using standard scoring procedures. Univariate differences between women categorized as adherent or nonadherent with clinical follow-up recommendations were analyzed using t-test analyses for continuous and by chi-square analyses for categorical variables. All chi-square analyses employed Yates correction for continuity. Multivariate differences between adherent and nonadherent women were analyzed using logistic regression. To facilitate interpretation of the resulting odds ratios, all continuous predictor variables representing measures of either distress or social support (i.e., POMS-Total, IES-Total, CESD, DUKE-SSQ) were dichotomized at the 75th percentile of the distribution of scores in the present sample. An alpha value of .05 was employed as the criterion for statistical significance in all analyses.

Results

Women were notified of the results of their biopsy/FNA procedure in several different ways. Most women reported they were notified of their results by the surgeon who performed the procedure either face-to-face (46% of sample) or over the telephone (23%). Other women reported they were notified of their results by the breast center nurse coordinator either face-to-face (2%) or over the telephone (26%). The remaining 3% of the sample reported that they received notification of their biopsy results via a letter from either their surgeon or the breast center nurse coordinator. Most women (89%) reported that at the time they were notified of their

biopsy results, no additional information or discussion was provided regarding their personal risk for breast cancer. The remaining women reported that they were told that their personal risk for breast cancer was "higher than average" (7%), "average" (2%), or "lower than average" (2%). In general, women were quite satisfied with the care they received before, during, and after their breast biopsy procedure. The mean satisfaction score was 9.1 (SD=1.7; range 2-10) with nearly two-thirds of the sample (n=75; 66%) reporting the maximum score of 10. Only 6 women (5%) reported a satisfaction score ≤ 5.

Types of Follow-up Recommendations and Prevalence of Adherence/Nonadherence

Among the 114 women in the study sample, 11 women (10%) were not given any specific recommendation for clinic follow-up. Rather, they were instructed to continue monthly practice of BSE and to call the breast center if any problems developed. All of these women were under the age of 40 years and most had received a biopsy result indicating a fibroadenoma or an intraductal papilloma. The remaining 103 women (90%) were given some recommendation for clinical follow-up, but the specific nature of this recommendation varied. In general, clinic follow-up recommendations were of two types: recommendations for CBE alone (n=31) or recommendations for both CBE and mammography (n=72) (see Table 1). Of the 72 women advised to return for both CBE and mammography, 63 women (88% of women with recommendations for CBE and mammography) were asked to return in six months for both CBE and mammography. Seven women were asked to return for both CBE and mammography in either three months (n=5; 7%), four months (n=1; 1%) or 12 months (n=1; 1%). Finally, two women (3%) were given recommendations for CBE within 2 or 3 months followed by mammography in 9 or 6 months, respectively. Of the 31 women advised to return for CBE

alone, 18 (58% of women with recommendations for CBE alone) were asked to return in three months. Of the remaining 13 women who received recommendations for CBE alone, five (16 %) were asked to return for CBE in 6 months while eight women (26%) were asked to return for CBE in a specific time period ranging from three weeks to 2 months.

Table 1 shows the percentage of women who were categorized as adherent or nonadherent as a function of type of follow-up recommendation provided. Of the 103 women given some recommendation for clinical follow-up, 66% (n=68) were categorized as adherent with their follow-up recommendations. The remaining 34% (n=35) were classified as nonadherent with follow-up recommendations. These two groups served as our criterion groups of adherent and nonadherent study participants in subsequent analyses.

Univariate Prediction of Nonadherence With Clinical Follow-up Recommendations

To identify univariate predictors of nonadherence with clinical follow-up recommendations a series of t-tests comparing the adherent (n=68) and nonadherent (n=35) groups were performed. Dependent variables included age, number of years of education, and satisfaction with medical care provided at the time of biopsy/FNA, as well as a variety of psychosocial, dispositional, and breast cancer risk variables assessed during the Initial Interview. Specific psychosocial variables employed as dependent variables in the analyses included current depressive symptoms (CESD total score), current mood disturbance (POMS total and subscale scores), breast cancer-related intrusive ideation and avoidance (IES total and subscale scores), BC-specific anxiety (BC-WORRY), and social support (DUKE-UNC Total score). Dispositional variables included optimism (LOT) and monitor and blunter subscale scores from the MBSS-SF. BC risk variables included both objective (lifetime BC risk, relative risk) and subjective

estimates (BC RISK-PERSONAL, BC-RISK-TYPICAL). Results of these t-test analyses are shown in Table 2. In these univariate analyses, women categorized as nonadherent with follow-up recommendations were younger ($t=4.78$; $p<.001$) and reported more depressive symptoms (CESD)($t=4.78$; $p<05$), greater overall mood disturbance (POMS-Total)($t=2.41$; $p<.05$), greater depression ($t=2.82$; $p<.01$), anger ($t=2.34$; $p<.05$), and confusion ($t=2.20$; $p<.05$) on the POMS, and higher BC-WORRY scores ($t=2.40$; $p<.05$). Women categorized as nonadherent also reported more BC-related avoidance and intrusive ideation, as evidenced by higher total scores ($t=3.15$; $p<.01$) on the IES as well as higher scores on the IES Intrusion ($t=2.42$; $p<.05$) and Avoidance ($t=3.30$; $p<.001$) subscales. Finally, nonadherent women evidenced both a greater objective lifetime risk for BC [33], as calculated from specific breast cancer risk factor information provided by each woman ($t=2.50$; $p<.05$), and reported a higher subjective estimate of lifetime risk for BC (BC RISK-PERSONAL) ($t=2.83$; $p<.01$).

Differences between the adherent and nonadherent groups on categorical variables were examined in a set of chi-square analyses. Dependent variables included race (caucasian vs. non-caucasian) annual household income (<$20K, $20-50K, >$50K), whether the woman had a spouse or regular partner (yes vs. no), medical insurance coverage (any vs. none), type of diagnostic procedure performed (biopsy vs. FNA), how the woman had been notified of diagnostic test results (telephone/letter vs. in-person), the specific type of follow-up recommendation given (CBE alone vs. CBE plus mammography), whether the woman had a FDR with a history of BC (yes vs. no), anxiety during BSE performance (none/little vs. some/definite), confidence in BSE performance (none/little vs. fair/definite), anxiety over future mammograms (none/little vs. some/lot), and belief that mammography can accurately detect BC

(agree vs. disagree). Results of these analyses are shown in Table 3. Significant differences between the adherent and nonadherent groups were evident with regard to annual household income (X^2 (2)=11.45; p<.01), type of follow-up recommendation given (X^2 (1)=9.98; p<.01), confidence in the ability to perform BSE correctly (X^2 (1)=9.67; p<.01), and beliefs in the ability of mammography to detect breast cancer early (X^2 (1)=4.78; p<.05). Specifically, women with lower annual household incomes, greater confidence in their ability to perform BSE correctly, less confidence in the ability of mammography to detect breast cancer early, and recommendations for follow-up CBE only were less likely to adhere to recommendations for clinical follow-up.

Multivariate Prediction of Nonadherence With Clinical Follow-Up Recommendations

A logistic regression analysis was performed in order to identify multivariate predictors of nonadherence with clinical follow-up recommendations. Variables were eligible for inclusion in an initial logistic regression model if their associated p-value in the univariate analyses (Tables 2 and 3) was $\leq .15$. The entire set of eligible variables was initially entered simultaneously as a single block. Individual variables were then removed in a stepwise fashion in order to arrive at an optimal regression model. Criteria for removal from the model was set at .05. Individual variables included in the original model were age (< 50 years vs. $\geq$ 50 years), income ($\leq$ \$20K vs. > \$20K), education ($\leq$12 years of education vs. >12 years) confidence in the ability to perform BSE correctly (none/little vs. fair/definite), belief in the ability of mammography to detect breast cancer early (strongly/somewhat agree vs. strongly/somewhat disagree), type of diagnostic procedure performed (biopsy vs. FNA), type of follow-up recommended (CBE vs. CBE plus mammography), worry about breast cancer (not at all/rarely/sometimes vs. often/all of the time),

perceptions of personal lifetime BC risk (< 50% vs. ≥ 50%), and objective lifetime BC risk (<12.5% vs. ≥ 12.5%). Total scores on the POMS and IES were dichotomized at the 75th percentile (i.e., 25% most distressed women vs. 75% least distressed), while total scores on the DUKE-SSQ were dichotomized at the 25th percentile (i.e., 25% with least social support vs. 75% with most social support). Finally, ratings of satisfaction with biopsy/FNA care were dichotomized at the 25th percentile (25% least satisfied vs. 75% most satisfied).

Results of the logistic regression analysis are shown in Table 4. The entire 15-variable model was able to significantly predict whether or not women were nonadherent with recommendations for clinical follow-up (model X^2 (15) = 51.90; $p < .0001$). The 15 variable model resulted in accurate classification of 82.7% of the sample (88.9% of adherent women and 71.4% of nonadherent women). Significant variables in the 15 variable model included confidence in the ability to perform BSE correctly (odds ratio=2.82; $p < .05$), age (odds ratio=.1386; $p < .05$), and type of follow-up recommendation given (odds ratio=11.38; $p < .05$). Perception of personal lifetime BC risk was marginally significant (odds ratio=3.5; $p < .07$). Specifically, risk for nonadherence with clinical follow-up recommendations was higher in women who professed confidence in their ability to perform BSE correctly, who indicated their personal lifetime risk for BC equaled or exceeded 50%, who were given follow-up recommendations that involved CBE only, and who were less than 50 years of age.

Stepwise removal of variables from the 15 variable model yielded a best fit model that contained 5 variables and allowed for significant categorization of women as adherent or nonadherent with follow-up recommendations (X^2 (5)=41.53; $p<.0001$). The 5-variable best fit model resulted in accurate classification of 78.6% of the sample (87.3% of adherent women and

62.9% of nonadherent women). The five variables retained in the best fit model included confidence in the ability to perform BSE correctly (OR=2.46; $p < .05$), perceptions of personal lifetime BC risk (OR=4.29; $p<.05$), total score on the IES (OR=4.03; $p<.05$), age (OR=.18; $p< .05$), and type of follow-up recommendation given (OR=5.95; $p<.01$). Specifically, risk for nonadherence with clinical follow-up recommendations was higher in women who professed confidence in their ability to perform BSE correctly, who indicated their personal lifetime risk for BC equaled or exceeded 50%, who were given follow-up recommendations that involved CBE only, who were less than 50 years of age, and who were among the 25% most distressed women on the basis of IES total scores.

Discussion

Appropriate clinical follow-up of women who have experienced a benign breast biopsy is important. While performance of the biopsy procedure itself does not directly confer additional risk, benign breast disease and a history of previous biopsy is associated with some elevated lifetime risk for BC [8-12]. While the degree of risk appears to vary as a function of histopathological features of the biopsy specimen as well as perhaps other clinical and demographic factors such as a woman's age [9], menopausal status [11], family history of breast cancer [10], or HER-2/*neu* status [42], it is not unreasonable to counsel (and expect) all women undergoing diagnostic breast biopsy to be particularly vigilant with regard to appropriate breast cancer screening [8]. Reflecting the lack of consensus in this area, women in our sample varied with regard to specific recommendations for clinical follow-up of their benign breast biopsy. However, regardless of the nature of the specific recommendation a woman was given, we

believe the fact that one third of our sample did not undergo their recommended clinical follow-up is a significant concern.

Given that nonadherence occurred in a significant proportion of our sample, the questions of "which women?" and "why?" assume critical importance. Results of our regression analyses (Table 4) suggest some answers with regard to the "which women?" question. In the present study, women classified as nonadherent with follow-up recommendations were more likely to be younger and to have received follow-up recommendations involving a return for CBE only. They were also more likely to report elevated perceptions of personal lifetime risk for BC, more confidence in their ability to perform BSE correctly, and higher levels of avoidance and intrusive ideation regarding their lifetime risk for BC at the Initial Interview, a mean of 3 weeks post-biopsy. In fact, using these 5 variables alone, we were able to correctly identify 87.3% (55/63) of the adherent women and 62.9% (22/35) of nonadherent women. Importantly, the specific type of diagnostic procedure performed (biopsy vs. FNA) was not associated with the likelihood of adherence with clinical follow-up recommendations either in the univariate (Table 3) or multivariate analyses (Table 4).

In the absence of more in-depth information, answers to the "why?" question should be viewed as speculative. Women may be less likely to adhere with recommendations for CBE follow-up alone, as opposed to recommendations for CBE plus mammography, because the absence of recommendations for concurrent mammography may diminish perceptions of the perceived importance of follow-up. Women who report greater confidence in their ability to perform BSE correctly may be less likely to adhere with follow-up recommendations because they view their effective practice of BSE as supplanting the necessity for clinical follow-up.

While some anxiety can be a motivating factor with regard to performance of appropriate health protective behaviors, excessive anxiety can result in fear and avoidance of appropriate protective behavior [29, 41, 43-47]. This may account for the higher likelihood of nonadherence in women reporting more frequent avoidance and intrusive ideation regarding their risk for developing BC. A similar process may underlie our perhaps counterintuitive finding that perceptions of higher lifetime BC risk were linked to a reduced likelihood of adherence with follow-up recommendations. It is often taken for granted that a perception that one is at greater risk for a disease is likely to motivate appropriate health protective behavior. However, elevated perceptions of risk may result in fear and avoidance, particularly when it is believed that protective behaviors are not available or difficult to execute [48-49]. Finally, younger women may be less likely to adhere with follow-up recommendations for several reasons. As breast cancer risk increases with age, younger women may perceive their risk for developing BC in the near future as minimal, thus reducing the perceived importance of participating in appropriate clinical follow-up of their biopsy. Additionally, the American Cancer Society advocates routine screening mammography for most women beginning at age 40 [50] while the National Institutes of Health does not advocate routine screening mammography until age 50 [51]. As a result, most women under the age of 40 and many women under the age of 50 are likely to have little experience with mammography and CBE. This may impact upon adherence to clinic follow-up recommendations in the biopsy setting in two ways. First, women in their 30's and 40's may perceive follow-up recommendations for CBE and/or mammography as inconsistent with these routine screening guidelines and thus less important for them. Second, the anxiety often associated with the biopsy experience [21, 23-28] may motivate women to avoid future cancer

screening. This effect might be particularly likely in younger women with little established history of participation in routine breast cancer screening.

Given the importance of appropriate clinical follow-up after a benign breast biopsy, a critical question is whether and how adherence with clinical follow-up recommendations can be enhanced. Drawing upon previous research in similar settings, a variety of potential intervention options are available [18, 52-59]. These options range in cost, with cost broadly viewed in terms of effort as well as personnel and monetary expense necessary for implementation. At the low cost end of the spectrum are interventions which entail simple provision of written information. For example, in a randomized trial of women receiving abnormal mammogram results, Lerman et al. found that mailing psychoeducational materials prior to the recommended one-year mammography follow-up resulted in an increase in the proportion of women receiving the recommended mammogram (66% adherence rate vs. 53% adherence rate in control women) [55]. At the higher cost end of the spectrum might be interventions which entail group or individualized counseling and education. The focus of intervention here would be management and reduction of any psychological distress associated with the biopsy experience or anticipation of future BC screening, development of appropriate perceptions of personal BC risk, and clarification of specific steps that can be taken to reduce BC risk or enhance early detection of BC. Psychoeducational interventions incorporating some or all of these or similar elements have been implemented with a variety of high risk cancer populations. These include women receiving recommendations for colposcopy follow-up after an abnormal cervical cancer screening result [18, 57], as well as women with a family history of breast cancer [52-54, 59]. While results have generally been promising, they have not been uniformly positive. Schwartz et al.

found that individualized breast cancer risk counseling resulted in reduced mammography use among less-educated women, suggesting the need for careful evaluation of intervention efforts [60].

Our findings regarding characteristics of women most likely to be nonadherent can play an important role in efforts to enhance adherence with recommendations for clinical follow-up after benign breast biopsy. On the one hand, our findings suggest characteristics that could be considered in targeting intervention efforts toward women most likely to be nonadherent. This is particularly helpful in situations where resources to intervene with all women are lacking. While perfect prediction of nonadherent women is not possible at the present time, our findings could allow some narrowing of the entire pool of women undergoing benign breast biopsy by identification of those most at risk for nonadherence (or alternatively identification of those most likely to be adherenct). On the other hand, our findings could be used to construct the intervention itself. Specifically, our findings suggest cognitive and affective factors or processes that may account for the failure to adhere with follow-up recommendations. For example, we might tentatively suggest that a successful intervention in the biopsy setting might include content elements designed to address the affective response to the biopsy experience, foster appropriate perceptions of BC risk, identify the limits of BSE alone as a BC screening tool, and reinforce the importance of biopsy follow-up in younger women.

To our knowledge, the present study constitutes an initial investigation into the prevalence and predictors of adherence with clinical follow-up recommendations after benign breast biopsy.

Further research is clearly warranted to confirm and extend our findings. Further research in this

area should also be mindful of the limitations of the present study, notably its relatively small sample size recruited from a single clinic facility, lack of specific apriori hypotheses, and the lack of a pre-biopsy assessment. In the present study, the Initial Study Interview occurred following receipt of biopsy results. It is certainly possible that a pre-biopsy assessment might yield a different set of variables that distinguish adherent from nonadherent women. However, this does not diminish the significance of our finding that these two groups can be significantly differentiated on the basis of response to the benign biopsy experience assessed during the first month or so following notification of biopsy results.

In conclusion, despite the importance of appropriate clinical follow-up after a benign breast biopsy, we found that slightly over one-third of our sample failed to undergo recommended follow-up. While the precise reasons for this are not known at the present time, our findings regarding demographic and clinical characteristics associated with nonadherence allow some speculation in this regard. This information could be used to identify women who might be appropriate targets for interventions to increase follow-up adherence. This information could also be used to identify critical content elements to be incorporated into any intervention. While undergoing a benign breast biopsy may be alarming to many women, the experience might have salutary effects as well. Indeed, the biopsy experience might constitute a "teachable moment" [61-63], an excellent opportunity for women to learn about effective breast cancer prevention and detection behavior, in particular, but also about appropriate cancer prevention and detection behaviors, in general.

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Table 1.

Adherence/Nonadherence With Clinic Follow-Up Recommendations as a Function of Type of Recommendation(s).

Type of Follow-Up Recommendation(s)	Total #	# Adherent[a]	# Nonadherent[a]
No Clinic Follow-Up; Continue BSE	11	--	--
Clinic Follow-Up: CBE Only	31	13 (42%)	18 (58%)
Mammography Only	0	--	--
Clinic Follow-Up: Mammography +CBE	72	57 (76%)	17 (24%)[b]
Any Clinic Follow-Up Recommended[c]	103	68 (66%)	35 (34%)

Note. n=114 in entire study sample.

[a] Number in parentheses indicates percentage of women in that category row adherent or nonadherent.

[b] Includes one woman who was adherent with recommendation for mammography but was nonadherent with recommendation for CBE.

[c] Includes women given recommendations for CBE Only (n=31) or Mammography + CBE (n=72)

Table 2

T-Test Comparison of Women Adherent (n=68) or Nonadherent (n=35) With Recommendations for Clinical Follow-Up.

	Adherent		Nonadherent		
Variable	Mean	SD	Mean	SD	p-value[a]
Age	49.6	12.5	37.3	12.0	.001***
# Years Education	13.9	3.0	12.9	2.8	.130
CESD-Total	10.1	9.5	15.6	13.3	.016*
POMS Scores					
Total	40.3	23.6	53.5	31.2	.018*
Depression	4.2	5.4	8.1	8.3	.006**
Tension	7.7	6.0	10.2	6.9	.058
Confusion	4.2	4.1	6.2	4.7	.030*
Anger	5.1	5.7	8.2	7.3	.021*
Fatigue	7.8	5.5	9.1	5.8	.245
Vigor	12.8	6.0	12.3	5.2	.682
IES Scores					
Total	15.5	14.6	25.7	17.4	.002**
Avoidance	8.7	8.6	14.8	9.5	.001***
Intrusion	6.9	7.5	11.0	9.3	.017*

Table 2 (Cont.)

	Adherent		Nonadherent		
Variable	Mean	SD	Mean	SD	p-value[a]
BC-WORRY	1.1	1.0	1.7	1.4	.018*
LOT-Optimism	30.2	4.3	30.4	5.4	.843
MBSS-SF-Monitor	4.9	1.7	5.3	1.5	.213
MBSS-SF-Blunter	2.9	1.4	3.1	1.3	.536
SS-DUKE-UNC	33.9	5.6	31.9	6.6	.124
Satisfaction With Care	9.3	1.4	8.7	2.1	.115
BC-Risk Estimates					
Objective Lifetime Risk	9.4	4.7	12.0	5.5	.014*
Relative Risk	2.9	1.5	3.3	1.8	.266
BC RISK-PERSONAL	28.1	23.1	42.8	27.9	.006**
BC RISK-TYPICAL	34.8	19.7	38.7	21.7	.368

[a] probability associated with t-value from independent samples t-test; two-tailed test of significance

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$

Table 3

Chi-Square Comparison of Women Adherent (n=68) or Nonadherent (n=35) with Recommendations for Clinical Follow-Up.

	Adherent		Nonadherent		
Variable	#	%	#	%	p-value[a]
Annual Household Income					.003**
< $20K	20	49%	21	51%	
$20-50K	19	66%	10	34%	
> $50K	27	87%	4	13%	
Current Spouse/Partner					.182
Yes	50	70%	21	30%	
No	18	56%	14	44%	
Medical Insurance Coverage					.536
Any	61	67%	30	33%	
None	7	58%	5	42%	
Race					.265
Non-Caucasian	9	53%	8	47%	
Caucasian	59	69%	27	31%	
Type of Diagnostic Procedure[b]					.076
Biopsy	50	72%	19	28%	
FNA	18	53%	16	47%	

Table 3 (Cont.)

Variable	Adherent #	Adherent %	Nonadherent #	Nonadherent %	p-value[a]
Type of Follow-up Recommendation					.001***
CBE only	13	42%	18	58%	
CBE + mammography	55	76%	17	24%	
Test Result Notification					1.00
Telephone/Letter	37	67%	18	33%	
In-person	31	66%	16	34%	
FDR With BC					0.27
Yes	13	59%	9	41%	
No	55	68%	26	32%	
Anxiety During BSE					1.00
None/little	48	65%	26	35%	
Some/definite	14	67%	7	33%	
Confidence in BSE					.002**
None/little	27	90%	3	10%	
Fair/definite	40	56%	32	44%	
Anxiety Over Future Mammograms					1.00
None/little	33	66%	17	34%	
Some/a lot	35	66%	18	34%	

Table 3 (Cont.)

	Adherent		Nonadherent		
Variable	#	%	#	%	p-value[a]
Mammography Can Detect BC					.029*
Strongly/Somewhat Aagree	67	69%	30	31%	
Strongly/Somewhat Disagree	1	16%	5	84%	

[a] Probability associated with X^2 statistic. All 2x2 chi square analyses employ Yates' correction of continuity

[b] Women receiving both biopsy and FNA procedures (n=7) classified in the biopsy group.

*** $p \leq .001$; ** $p \leq .01$; *$p \leq .05$

Table 4

Logistic Regression Analysis of Nonadherence With Clinical Follow-Up Recommendations.

	Entire Model			Best-Fit Model		
Variable	OR[a]	95% CI[b]	p-value[c]	OR	95% CI	p-value
Age	.14	.02 - .90	.04	.18	.04 - .79	.023
Type of Follow-Up	11.38	1.01 - 127.73	.05	5.95	1.79 - 19.74	.003
Subjective BC Risk	3.53	.94 - 13.30	.06	4.29	1.36 - 13.53	.013
Confidence in BSE Ability	2.83	1.18 - 6.80	.02	2.46	1.22 - 4.98	.012
IES-Total	2.85	.66 - 12.31	.16	4.03	1.16 - 14.01	.029
Income	.42	.09 - 1.93	.27			
Education	2.04	.47 - 8.78	.34			
Type of Procedure	2.53	.26 - 24.27	.42			
Satisfaction With Care	.91	.21 - 3.98	.90			
Objective BC Risk	.40	.10 - 1.67	.21			
Mammography Efficacy	7.77	.39 - 156.21	.18			
POMS-Total	1.35	.24 - 7.48	.73			
CESD	.98	.13 - 7.16	.98			
DUKE-SSQ	.65	.12 - 3.43	.61			
BC Worry	4.04	.67 - 24.58	.13			

Table 4 (Cont.)

[a] Odds ratio;

[b] Confidence Interval;

[c] p-value associated with test of significance for OR

Note: Variables coded as follows: Age (< 50 years (1); ≥50 years (2)); Type of Follow-Up (CBE plus mammography (1); CBE only (2)); Subjective BC risk (< 50% (1); ≥50% (2)); Confidence in BSE Ability (none/little (1); Fair/definite (2)); IES-total (<30 (1); ≥30 (2)); Income (< $20K (1); ≥$20K (2)); Education (≤12 years (1); >12 years (2)); Type of Procedure (biopsy (1); FNA (2)); Satisfaction With Care (≤ 8 (1); > 8 (2)); Objective BC Risk (< 12.5% (1); ≥ 12.5% (2)); Mammography Efficacy (strongly/somewhat agree (1); strongly/somewhat disagree (2)); POMS-Total (≤ 60 (1); > 60 (2)); CESD (≤ 17 (1); > 17 (2)); DUKE-SSQ (≤ 29 (1); > 29 (2)); BC Worry (not at all/rarely/sometimes (1); often/all the time (2))

Running head: THE CANCER "BAD NEWS" CONSULTATION

Communication in the Cancer "Bad News" Consultation:

Patient perceptions and psychological adjustment

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Abstract

The purpose of this study was to explore relationships between breast cancer survivors' experiences during the diagnostic consultation and their subsequent long-term psychological adjustment. Sixty women (M age = 53 years) who had been diagnosed with local or regional breast cancer (Stage 0-IIIA) an average of 28 months prior were interviewed by telephone. Measures included: Cancer Diagnostic Interview Scale, Anxiety subscale of the Hospital Anxiety and Depression Scale, Posttraumatic Stress Disorder Checklist - Civilian Version, Center for Epidemiologic Studies Depression Scale, and ad-hoc items regarding memory for, and satisfaction with, the diagnostic consultation. After controlling for demographic and clinical variables, the three CDIS subscales accounted for 12% of the variance in women's PCL-C scores (F Change = 3.46, $p < .05$). The CDIS-Caring subscale was a significant predictor in the "best-fit" regression model for each of the three indices of long-term distress (all Bs > -.23, $p < .05$). In contrast, the CDIS-Competence subscale was not a significant predictor in any of the "best-fit" models. Additionally, women's satisfaction with physician behavior during the diagnostic consultation was unrelated to all adjustment measures ($rs < .10$, $ps > .50$). Findings suggest that women's perceptions of physicians' interpersonal skills during the diagnostic consultation are associated with later psychological adjustment.

Communication in the Cancer "Bad News" Consultation: Patient perceptions and psychological distress

To some extent, there has always been interest in the physician's "bedside manner." It is no surprise that people have always tended to prefer a physician who is not only knowledgeable but is also pleasant and caring. In recent years, however, a new question has emerged: Is the physician with a good bedside manner actually good for your mental health? Can he/she have a major impact on how well you cope with a chronic illness, a painful procedure, or a poor prognosis?

Preliminary research suggests that a physician's interpersonal and communication skills are, in some way, associated with patients' psychological adjustment. In a study by Lerman et al. (1993), 84% of breast cancer patients reported difficulties in communicating with their medical teams. Although the average severity of the communication problems was relatively low, more communication problems predicted more disturbance in patient mood three months after the diagnosis, even when initial distress was controlled. Similarly, Silliman, Dukes, Sullivan, and Kaplan (1998) found that breast cancer patients' ratings of their physicians' communication skills significantly predicted patients' general and cancer-specific psychological health.

It has also been suggested that certain communication events, such as the disclosure of significant information (e.g., test results, diagnosis, prognosis), are so important that the physician's interpersonal manner during this encounter, alone, might set a patient on a certain coping trajectory. The topic of "breaking bad news" has become quite popular recently. There are many articles in medical journals that offer advice to physicians on how to handle difficult disclosure situations in the most psychologically healthy manner for the patient (e.g., Girgis

& Sanson-Fisher, 1998). However, only three empirical studies can be found that actually test whether there is a substantial relationship between the physician's communication in a "bad news" consultation and patients' subsequent adjustment (Butow et al., 1996; Omne-Ponten, Holmber, & Sjoden, 1994; Roberts, Cox, Reintgen, Baile, & Gibertini, 1994).

Short-term psychological adjustment was associated with the patient's perception of the quality of communication during the disclosure of the cancer diagnosis in the study by Omne-Ponten, Holmber, & Sjoden (1994). They conducted semi-structured interviews with breast cancer patients four months, thirteen months, and six years post-diagnosis. At all three time points, psychological adjustment was assessed using the Social Adjustment Scale. During the third interview, six years post-diagnosis, patients were asked whether their cancer diagnostic consultation had been a particularly negative interpersonal interaction. Patients who endorsed this item showed poorer psychological adjustment at the four- and thirteen-month assessments but not at the six-year assessment.

Butow et al. (1996) documented a relationship between patient satisfaction with communication in the cancer diagnostic consultation and patients' short-term psychological status. Psychological adjustment of breast cancer and melanoma patients was assessed three months after the cancer diagnosis, using the Psychological Adjustment to Cancer Scale. Patients' recollections of, and opinions about, their cancer diagnostic consultation were also assessed an average of 52 months (SD = 44 months) post-cancer-diagnosis. Women who reported more satisfaction with the physician's communication during the diagnostic consultation reported less psychological distress at three months post-diagnosis.

Roberts et al. (1994) reported a connection between cancer patients' perceptions of physician behavior at the time of the diagnostic consultation and

patients' short-term psychological well-being. Using the Cancer Diagnostic Interview Scale, breast cancer patients' perceptions of the physician's behavior during the diagnostic consultation were assessed six months after breast surgery. Psychosocial adjustment was measured using the Global Severity Index (GSI) of the Symptom Check List–90–R (SCL-90-R). Women's perceptions of their physicians' use of basic psychotherapeutic techniques during the diagnostic consultation were related to psychological adjustment at six months post-diagnosis. Specifically, 21% of the variance in GSI scores was accounted for by patients' ratings of their physician's behavior during the diagnostic consultation. The more a patient reported that her physician was warm, caring, informative, and interpersonally skillful, the more likely she was to show better subsequent psychological adjustment. The authors concluded that the physician's use of basic psychotherapeutic techniques during the diagnostic consultation has a significant positive influence on the patient's well-being.

The results of these three studies suggest that cancer patients' perceptions of physician behavior and satisfaction with communication in the diagnostic consultation may be significantly associated with patients' short-term (i.e., 3-13 months post-diagnosis) psychological adaptation. This may be because the diagnostic consultation is an especially salient communication interaction. It marks the beginning of the individual's experience with a life-threatening disease, and possibly the beginning of a lengthy relationship with the physician who disclosed the news. A patient's experiences in the bad news consultation may set him or her on either a relatively positive or negative emotional trajectory, thereby influencing psychological well-being, at least in the short-term.

The relationship between cancer patients' perceptions of the diagnostic consultation and long-term psychological adjustment is less clear. Both Butow et al. (1996) and Roberts et al. (1994) examined only short-term psychological

adjustment (i.e., 3-6 months post-diagnosis). While Omne-Ponten et al. (1994) found psychological adjustment at 13 months post-diagnosis to be associated with a negative perception of the diagnostic consultation, this relationship was not present for psychological adjustment at six years post-diagnosis. Unfortunately, their use of only a single dichotomous item to assess patients' perceptions of the diagnostic consultation may have weakened their ability to detect any existing relationship. Thus, the relationship between patients' perceptions of the diagnostic consultation and long-term psychological adjustment remains to be established.

In addition, it would be useful to know whether women's perceptions of the diagnostic consultation are associated more with generalized psychological distress or with more specific adjustment problems, such as depression and/or PTSD-like symptoms. The three studies reviewed above all used only global measures of psychosocial adjustment (e.g., GSI index from SCL-90-R). At this time, it would be important to compare general measures with more specific measures, so that we may be able to pinpoint the psychological processes that may be affected by a physician's interpersonal manner.

Similarly, perceptions of physician behavior during the diagnostic consultation have also been assessed rather globally. As a result, little is known about the relationship between specific aspects of the diagnostic consultation and psychological adjustment. In particular, it may be important to differentiate between patients' perceptions of their physicians' technical competence during the interview and perceptions of the physicians' skill in managing the interpersonal aspects of the communication (e.g., emotional supportiveness and caring). Previous research has suggested that medical patients are capable of distinguishing among physicians' interpersonal, communication, and technical skills, and that these are among the most important dimensions for determining

patients' perceptions of the quality of medical care (Cockburn et al., 1991; Di Matteo & Hays, 1980; Thom & Campbell, 1997; Wiggers, O'Donovan, Redman, & Sanson-Fisher, 1990). Although research has documented the relative importance of these three factors for patient outcomes such as satisfaction (Wiggers et al.), trust in the physician (Thom & Campbell, 1997), and compliance with medical recommendations (Willson & McNamara, 1982), no research to date has compared the importance of these factors with regard to patients' psychological adjustment.

In light of the above, the present study examines the relationship between specific aspects of breast cancer patients' perceptions of the diagnostic consultation and their long-term psychological adjustment outcomes. It is hypothesized that: (1) patients' overall perception of physician behavior during the diagnostic consultation will be positively associated with long-term psychological adjustment; and (2) perceptions of a physician's emotional supportiveness during the diagnostic consultation will be more strongly associated with psychological adjustment than perceptions of a physician's technical competence during the consultation.

Method

Design and Procedure

Study participants were recruited from the Comprehensive Breast Care Center at the University of Kentucky Chandler Medical Center. To be eligible for study participation, a woman had to: (a) be $\geq$ 18 years of age, (b) be 10-48 months post-diagnosis of breast cancer ($\leq$ Stage IIIA), (c) be at least three months post-treatment (surgery, chemotherapy, and radiation) for breast cancer, (d) be in disease remission, and (e) have no previous history of cancer, other than basal cell skin carcinoma. Eligible women were identified from a research screening questionnaire completed during a routine clinic visit. One hundred eligible

women were sent letters describing the study and inviting them to participate; also enclosed in the mailing were two copies of an informed consent form and a stamped, return envelope. Women interested in participating in the study were instructed to read and sign the consent forms, then to return one copy by mail. In addition to the letter, most women also received a follow-up telephone call, intended to answer women's questions about the study and to encourage their participation. Following receipt of a woman's signed consent form, the woman was called and a telephone interview was scheduled. Copies of all study measures were then mailed to the woman and she was instructed to use them as visual aids during the telephone interview. The woman was then called at the appointed time and all study measures were completed. All interview data was recorded manually by the interviewer during the interview. The interviewer was not involved in any aspect of the woman's medical care. Upon completion of the interview, disease and treatment information was extracted from participants' medical records. All study procedures were approved by the local medical institutional review board.

Of the 100 women sent letters inviting them to participate in the study, 65 completed interviews. Reasons for non-participation in the study were as follows: 13 women expressed disinterest in the study; nine women reported they were too busy to participate; five stated that they were unable to participate due to other health problems; five did not respond to the letter and were not reachable by telephone; and three indicated that they did not want to take part in the study because they disliked talking about their experiences with breast cancer. Of the 65 women interviewed for the study, five were excluded from analyses because they were later found to not meet all eligibility criteria.

Participants

The final study sample consisted of 60 women, ranging in age from 27 to 82 years at the time of the study (M = 53.7; SD = 11.2). Each had received an initial diagnosis of breast cancer 10 to 48 months previously (M = 28 months; SD = 10.5). Most women (87%) had been diagnosed with stage 0-II breast cancer. Seven per cent of women had stage IIIa breast cancer, and disease stage data was unavailable for an additional seven per cent of the study sample. Specific treatments represented in the sample were: lumpectomy and radiation (20%); lumpectomy, radiation, and chemotherapy (27%); mastectomy alone (22%); mastectomy and chemotherapy (23%); and some other combination of treatments (8%). Demographic characteristics of the study sample were as follows: 97% were Caucasian, 75% were married, and 43% were currently employed. Participants had a mean of 13.9 years of education (SD = 3.0). Women's annual household income was as follows: less than $20,000 (22%), $20,000-$40,000 (22%), $40,000-$60,000 (24%), and more than $60,000 (30%). Income data was unavailable for the remaining 2% of the study sample.

Materials

Sociodemographic information was collected from each participant during the telephone interview. In addition, the following standardized instruments were completed by all respondents: the Anxiety subscale of the Hospital Anxiety and Depression Scale (HADS), the Center for Epidemiologic Studies Depression Scale (CES-D), the Posttraumatic Stress Disorder Checklist - Civilian Version (PCL-C), and the Cancer Diagnostic Interview Scale (CDIS).

The 7-item Anxiety subscale of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was used to determine the extent to which women currently experience general anxiety and psychological distress. The HADS has been administered by telephone interview in previous studies (e.g., Helgeson et al., 2000). Sample items include "I get sudden feelings of

panic" and "Worrying thoughts go through my mind." Women were asked to respond on a four-point scale, according to how often they have felt that way during the past week. Scores on the Anxiety subscale of the HADS (HADS-Anx) range from 0 to 21. In studies with cancer patients, a cut-point of 8 has been shown to be ideal, yielding a sensitivity of 72-75% and a specificity of 75-81% for identifying significant psychological distress (Kugaya et al., 2000; Razavi, Delvaux, Farvacques, & Robaye, 1990). Coefficient alpha in the present study was .91.

Participants' current depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D has been administered by telephone interview in previous studies (e.g., Gonzalez et al., 1995; Lin et al., 1992). The CES-D is a 20-item instrument that assesses a variety of cognitive, affective, behavioral, and somatic symptoms associated with depression. Respondents use a four-point scale to indicate how frequently they experienced depressive symptoms during the preceding week. Sample items include: "I felt that everything I did was an effort," and "My sleep was restless." CES-D scores range from 0 to 60. A cut-point of 21 was found to be ideal for identifying major depression in older patients; it has a sensitivity of 92% and a specificity of 87% (Lyness et al., 1997). Coefficient alpha in the present study was .93.

Cancer-related PTSD symptomatology was assessed using the Posttraumatic Stress Disorder (PTSD) Checklist - Civilian Version (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1991). The PCL-C has been administered by telephone interview in previous studies (e.g., Manne, DuHamel, Gallelli, Sorgen, & Redd, 1998; Andrykowski, Cordova, McGrath, Sloan, & Kenady, 2000). The PCL-C is a 17-item instrument that assesses the degree to which an individual currently experiences certain trauma-related anxiety

symptoms. The items directly correspond to the diagnostic criteria listed in the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (American Psychiatric Association, 1994) for the diagnosis of PTSD. For each PCL-C item, respondents use a five-point Likert scale to indicate the extent to which they have been bothered by that problem during the past month. All women completed the PCL-C with reference to a specific potentially traumatic event, in this study, "the diagnosis and treatment of breast cancer" (cf., Andrykowski, Cordova, Studts, & Miller, 1998; Smith, Redd, DuHamel, Vickberg, & Ricketts, 1999). It yields a total score and three subscale scores corresponding to the primary symptom clusters comprising PTSD. Coefficient alpha for the PCL-C total score in the present study was .93. Scores on the PCL-C range from 17 to 85. The most efficient cut-off score is 50; this yields a sensitivity of .78-.82 and a specificity of .83-.86 for identifying people who meet the criteria for a formal PTSD diagnosis (Weathers et al.; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996).

The Cancer Diagnostic Interview Scale (CDIS; Roberts et al., 1994) is an 18-item scale that uses a five-point Likert scale response format to measure the degree to which the respondent perceived her physician as having used psychotherapeutic techniques while conducting the cancer diagnostic consultation. The CDIS has been administered by telephone interview in one previous study (Roberts et al., 1994). Sample items include: "My doctor understood my fears and concerns," "My doctor discussed different treatments available for my type of cancer," and "My doctor did not take time to answer all my questions." Reliability estimates for the CDIS are as follows: Cronbach's alpha = .92 (Roberts et al.) and test-retest = .78 (C. S. Roberts, personal communication, June 3, 1997). Coefficient alpha in the present study was .94.

Two additional items were developed solely for use in this study. They assessed additional aspects of the breast cancer diagnostic consultation not measured by the CDIS. For one item (DC-Mem), women were asked to rate their memory for the diagnostic consultation. They responded using a 10-point Likert scale, with endpoints labeled "very poor" and "excellent." For the other item (DC-Sat), women were asked to rate their satisfaction with the diagnostic consultation. They responded using a 10-point Likert scale, with endpoints labeled "not satisfied at all" and "extremely satisfied".

Data Analysis

Standard scoring procedures were used for the HADS-Anx, CES-D, PCL-C, and CDIS-Total. In addition, CDIS subscales were generated from a factor analysis of the CDIS, and factor-based scoring was then used to derive subjects' subscale scores. An orthogonal principal components analysis was conducted using varimax rotation. Based upon analysis of the eigenvalues and scree plots, three factors emerged. An item was retained on a factor if its highest loading was on that factor, if the factor loading was $\geq .55$ for that factor, and if the loading of that item on the other two factors was lower than the loading on the factor of interest by at least .20.

Examination of the items composing each of the three extracted CDIS factors suggests that the factors represent the following constructs: physician caring ("Caring"), physician technical competence ("Competence"), and degree of mutual understanding between physician and patient ("Understanding"). Items on the Caring subscale describe a physician who was comfortable with emotions and who spent adequate time with the patient, providing information and welcoming the patient's questions. CDIS items found to belong on this subscale were items 3 (doctor did not take time to answer my questions; reverse-scored), 5 (doctor encouraged my expression of feelings), 13 (wish doctor had given me more time

to ask about my cancer; reverse-scored), 16 (doctor preferred to be emotionally detached; reverse-scored), and 17 (doctor appeared annoyed and impatient with my questions; reverse-scored). Coefficient alpha for the Caring subscale was .82.

The Competence subscale describes a physician who provides the patient with information about cancer-related tests, procedures, and treatments, and who instills in his/her patients a sense of faith or trust in the doctor. CDIS items found to belong on this subscale were items 6 (was given a lot of information), 8 (doctor discussed different treatments available), 9 (left the office feeling I was in good hands) and 10 (doctor explained the need for tests/procedures). Coefficient alpha for the Competence subscale was .85.

The Understanding subscale reflects the extent to which the patient understood the information provided by the doctor, in addition to how well the doctor seemed to understand feelings and concerns voiced by the patient. CDIS items found to belong on this subscale were items 1 (doctor understood my fears, concerns), 2 (felt hopeful after talking to doctor), and 11 (did not understand information doctor gave me; reverse-scored). Coefficient alpha was .74.

Results

Descriptive Characteristics

Women rated the cancer diagnostic consultation as a highly memorable event. The mean DC-Mem score was 8.82 on a 10-point scale (SD = 1.30, range = 5-10). Forty-three percent of women rated their recall as "excellent" (10/10) and 85% of women rated their recall very highly ($\geq$ 8/10). No women reported very poor recall ($\leq$ 4/10) for the cancer diagnostic consultation. There was no correlation between time since cancer diagnosis and memory for the diagnostic consultation (r = -.01, ns). Overall, women indicated that they were moderately satisfied with the physician's communication in the diagnostic consultation (M DC-Sat score = 7.34, SD = 3.26, range 1-10). A majority of women (62%)

indicated a high degree of satisfaction with the interaction (scores ≥ 8), while a sizable minority (16%) reported extreme dissatisfaction with the interaction (scores ≤ 3).

Descriptive statistics for the remaining primary study variables are shown in Table 1. Women's ratings of physician behavior during the diagnostic consultation were only moderately positive. The mean total CDIS score was 68.27. This translates into a mean CDIS item score of 3.79 (range 1-5). This suggests that the typical woman primarily gave ratings of "neutral" to "agree somewhat" to items asserting that the cancer diagnostic consultation had been a positive interpersonal interaction, given the stressful circumstances.

Insert Table 1 About Here

Inspection of scores for our measures of long-term psychological adjustment indicated that 47% of the sample scored above the cut-off on at least one measure. The HADS-Anx was the most commonly elevated measure; 45% of women scored ≥ 8 on this scale. Twenty-three percent of our sample scored ≥ 21 on the CES-D. Finally, 10% of our sample evidenced total scores ≥ 50 on the PCL-C.

There was a modest degree of comorbidity of psychological problems within our sample. Fifteen percent of women evidenced scores in the clinical range on two of the measures. Eight percent of women scored above the cut-off on all three psychological adjustment measures.

Univariate Relationships Among Study Variables

Pearson Product Moment Correlations between and among our primary study variables and demographic (age, income) and clinical variables (time since diagnosis, disease stage) are shown in Table 2. There were strong associations

among the diagnostic consultation variables. The CDIS scale and subscales were highly intercorrelated (all $\underline{r}s > .50$, $\underline{p}s < .01$). For example, women who described their physicians as more caring were also likely to describe him/her as more competent ($\underline{r} = .71$, $\underline{p} < .01$) and more understanding ($\underline{r} = .57$, $\underline{p} < .01$). Women's satisfaction with the diagnostic consultation was highly correlated with the CDIS scale and subscales. Women who perceived their physicians to be more caring, competent, and understanding during the diagnostic consultation reported more satisfaction with the interaction ($\underline{r} = .56$, $\underline{r} = .55$, and $\underline{r} = .63$, respectively; all $\underline{p}s < .01$). In contrast, women's memory for the diagnostic consultation was consistently not related to any of the other diagnostic consultation variables (all $\underline{r}s < .10$).

Diagnostic consultation variables showed some associations with long-term psychological distress measures. There were significant or near-significant associations for all CDIS scales and for all three psychological adjustment measures. The outcome measure most associated with the CDIS scales seemed to be PCL-C scores. PCL-C scores were significantly associated with the CDIS Caring and Understanding subscales ($\underline{r} = -.32$, and $\underline{r} = -.28$, respectively, $\underline{p}s < .05$). More physician caring and understanding was predictive of less long-term cancer-related PTSD symptomatology among the women in our sample.

CDIS Caring was the most important CDIS variable for predicting long-term psychological adjustment. In addition to the significant inverse association with PCL-C scores, CDIS Caring scores were also inversely correlated with CES-D scores. Women who perceived their physician to be more caring during the diagnostic consultation reported less long-term depressive symptomatology ($\underline{r} = -.28$, $\underline{p} < .05$). Furthermore, there was a near-significant association between Caring and HADS-Anx scores. Women who described their physician as more caring during the diagnostic consultation tended to report fewer generalized

anxiety symptoms (r = -.25, p = .06). Although only three of twelve correlations between CDIS scores and psychological distress measures reached statistical significance and three additional correlations reached near-significance, it was noted that all twelve correlations were in the hypothesized (inverse) direction. In contrast to women's perceptions of physicians' behavior during the cancer diagnostic consultation, women's memory for, and satisfaction with, the diagnostic consultation were consistently unrelated to all psychological distress measures (all ps > .50).

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Insert Table 2 About Here

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Multivariate Prediction of Long-Term Psychological Adjustment

To examine the relationship between perceptions of physicians' behavior during the diagnostic consultation and women's subsequent psychological adjustment, three parallel hierarchical multiple regression analyses were performed. Dependent variables were the total scores on the HADS-Anx, the CES-D, and the PCL-C. At step 1 in each analysis, four control variables were entered as a block: women's age at time of interview, annual household income, time between diagnosis and study interview, and disease stage at diagnosis. At step 2 in each analysis, the three CDIS subscale scores were entered as a block. Results are shown in Table 3.

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Insert Table 3 About Here

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The four control variables accounted for 28.1% of the variance in HADS-Anx scores (Multiple R = .53; F = 5.38; p < .01). Entry of the three CDIS subscale scores into the equation resulted in a non-significant 7.6% increment in

the variance in HADS-Anx scores accounted for [F (3, 52) = 2.05, p = .12]. In all, the full seven-variable model accounted for 35.7% of the variance in HADS-Anx total scores [F (7, 52) = 4.13, p < .01]. Annual household income (beta = -.54) and time since diagnosis (beta = -.29) were the only significant predictors of HADS-Anx scores (ps < .05).

The four control variables accounted for 28.8% of the variance in CES-D scores (Multiple R = .54; F = 5.56; p < .01). Entry of the three CDIS subscale scores into the equation resulted in a non-significant 7.0% increment in the variance in CES-D scores accounted for [F (3, 52) = 1.90, p = .14]. In all, the full seven-variable model accounted for 35.8% of the variance in CES-D total scores [F (7, 52) = 4.15, p < .01]. Annual household income (beta = -.51) and CDIS Caring (beta = -.34) were the only significant predictors of CES-D scores (ps < .05).

The four control variables accounted for 29.7% of the variance in PCL-C scores (Multiple R = .55; F = 5.81; p < .01). Entry of the three CDIS subscale scores into the equation resulted in a significant 11.7% increment in the variance in PCL-C scores accounted for [F (3, 52) = 3.46, p < .05]. In all, the full seven-variable model accounted for 41.4% of the variance in PCL-C total scores, F (7, 52) = 5.25, p < .001. Age (beta = -.26), annual household income (beta = -.48) and time since diagnosis (beta = -.29) were the only significant predictors of PCL-C scores (ps < .05).

To determine the "best-fit" predictive model for each of our three long-term adjustment measures, individual variables from the seven-variable model described above were eliminated in stepwise, backward fashion (Table 4). The criterion for eliminating variables from the model was set at p = .10. The "best-fit" model for predicting HADS-Anx scores accounted for 30.1% of the variance [F (3, 56) = 8.06, p < .001]. Significant individual predictor variables included:

income (beta = -.45), time since diagnosis (beta = -.32), and CDIS Caring (beta = -.23), all ps < .05.

The "best-fit" model for predicting CES-D scores accounted for 33.3% of the variance [F (4, 55) = 6.88, p < .001]. Significant individual predictor variables included: income (beta = -.45) and CDIS Caring (beta = -.25), ps < .05.

The "best-fit" model that emerged accounted for 36.3% of the variance in PCL-C scores [F (4, 55) = 7.83, p < .001]. Significant individual predictor variables included: age (beta = -.22), income (beta = -.40), time since diagnosis (beta = -.30), and CDIS Caring (beta = -.29), all ps < .05.

Insert Table 4 About Here

Discussion

The purpose of this study was to learn how breast cancer patients' experiences during the diagnostic consultation might be related to their subsequent long-term psychological adjustment. We found that patient satisfaction with physician behavior during the diagnostic consultation was unrelated to all measures of women's long-term psychological adjustment. In contrast, some evidence suggested that women's descriptions of their physician's behavior during the diagnostic consultation were significantly associated with long-term adjustment. Specifically, consideration of the three CDIS subscale scores yielded a significant 12% increment in variance accounted for in PCL-C scores beyond that accounted for by demographic and clinical variables (Table 3). Additionally, scores on the CDIS-Caring subscale were a significant predictor in the "best fit" regression model for each of our three indices of long-term adjustment (Table 4).

Our first hypothesis predicted that women's overall perceptions of physician behavior during the diagnostic consultation would be positively associated with their long-term psychological adjustment. This hypothesis received partial support. The three CDIS subscales yielded an increment of 7-12% in variance accounted for in our three indices of long-term psychological adjustment, with the 12% increment in variance for PCL-C scores attaining statistical significance (Table 3). These findings are generally consistent with the previous work of Roberts et al. (1994). Their study showed that women who perceived physician behavior in the diagnostic consultation that is thought to be more psychotherapeutic also tended to have better short-term psychological adjustment. The present study extends these findings in two ways: by demonstrating that there may still be a modest effect of physician behavior in the long-term post-cancer phase, and by suggesting that the effect may be greater on certain specific psychological symptoms (i.e., PTSD) than on generalized psychological distress (e.g., HADS).

In contrast, univariate analyses indicated no significant relationship between patients' satisfaction with the diagnostic consultation and any of our indices of long-term psychological adjustment. Previous research has established a relationship between patient satisfaction with the diagnostic consultation and patients' psychological well-being during the short-term, post-cancer phase, but not in the long-term recovery period. Butow et al. (1996) demonstrated that satisfaction was positively associated with better adjustment three months post-diagnosis. Omne-Ponten et al. (1994) found a significant association between satisfaction and adjustment four and thirteen months post-diagnosis, but no such association six years post-diagnosis. When taken together, our present findings and past research lead us to conclude that perceptions of physician behavior during the diagnostic consultation, not patients' satisfaction with physician

behavior, are predictive of breast cancer patients' long-term psychological adjustment.

Perception of physician behavior is probably a better predictor of long-term psychological adjustment than patient satisfaction because it seems to be a more reliable and valid indicator of the patient's experience during the diagnostic consultation. The 18-item CDIS is a list of specific physician behaviors that may or may not have occurred during the diagnostic consultation. The multi-item, multi-dimensional, behaviorally-based nature of the CDIS makes it a better measure than the evaluative, single-item measure that is used to assess global patient satisfaction. The construct measured by the CDIS, "psychotherapeutic" behavior, also borrows from a stronger theoretical and empirical base (i.e., the psychotherapy literature) than does the construct of patient satisfaction. Researchers have recently expressed great concern over the lack of understanding for the variable of patient satisfaction. They claim that it is a complex, multidimensional variable, which does not yet have an adequate theoretical formulation (Avis, Bond, & Arthur, 1995; Carr-Hill, 1992; Strasser, Aharony, & Greenberger, 1992). Others have noted that global ratings of patient satisfaction with medical care tend to be quite high, to be lacking in variability, and to be generally unrelated to efficacy of intervention or patient psychological adjustment (Baider, Uziely, & De-Nour, 1997; Oberst, 1984; Wiggers et al., 1990). In this light, perhaps it should not be surprising that we found patient satisfaction with the cancer diagnostic consultation to be unrelated to patients' subsequent psychological distress.

The second study hypothesis was that perceptions of a physician's emotional supportiveness during the diagnostic consultation would be more strongly associated with psychological adjustment than perceptions of a physician's technical competence during the consultation. Our study results

strongly support this hypothesis. The CDIS Caring subscale score was a significant predictor of psychological adjustment in all three of our "best fit" regression models (Table 4). In contrast, the CDIS Competence subscale was not a significant predictor for any of our three indices of long-term adjustment. Thus, women who perceived that their physician expressed more caring and emotional supportiveness when telling them about their cancer diagnosis tended to have fewer cancer-related PTSD symptoms, less depression, and less general distress. However, this was not true for perceptions of physicians' technical skills; the extent to which a woman perceived her physician as technically competent was not predictive of her long-term psychological well-being. This is a novel finding, since no previous research has examined the relative importance of physicians' technical versus interpersonal competence for patients' subsequent psychological adjustment. Previously, groups of primary care patients and cancer patients have indicated that interpersonal and technical skills are highly- and equally-important components of a physician's professional competence (Thom & Campbell, 1997; Wiggers et al., 1990). Compared to this literature, our results diverge, by suggesting that patients' perceptions of physicians' interpersonal manner have more bearing when it comes to patients' long-term emotional health.

Although this study has a number of strengths, it also has limitations that warrant acknowledgement. First, the study is correlational, so no definitive statements can be made about causal relationships between our study variables. Although our underlying hypothesis could be true (i.e., that physician behavior during the diagnostic consultation plays a causal role in determining women's long-term psychological adjustment), there are other possible explanations for the association we found between physician behavior and patient adjustment. One reasonable alternative hypothesis is that patients' recollections of the cancer diagnostic interview are more a function of the person's current psychological

status than of the actual event. Distressed individuals may tend to recall and report all kinds of events and situations more negatively than they would if they were not suffering from psychological problems. Since we measured women's perceptions of physician behavior (not physician behavior directly), we can not rule out the possibility of this explanation.

Another hypothesis is that the relationship is a function of the patient's psychological status at the time of the diagnostic consultation and its effects on the physician. Given the relative stability of psychological functioning, it is reasonable to think that women with psychological distress or maladjustment two years after cancer may also have been distressed at the time of their diagnoses. Some physicians may find it aversive to interact with patients who are very upset or who have difficult personality styles; physicians may find it hard to use their best interpersonal skills with such patients during a cancer diagnostic consultation.

Essentially, then, the direction of effect could be from physician behavior to patient adjustment, vice versa, or bi-directional. Of course, the only way to clarify this issue would be to experimentally manipulate the patients' experience in the cancer diagnostic consultation. However, this is precluded by obvious ethical and practical constraints. Therefore, our correlational design, although not scientifically ideal, was necessary and is informative. The problem of possible confounds was addressed in our analyses by statistically controlling for known risk factors for maladjustment.

There are several measurement issues that may threaten the validity of these study findings. One potential problem is the retrospective nature of women's reports of their diagnostic consultation. Women were asked to provide their recollections of an event that had occurred from one to four years prior. Memory decay, alone, could produce flawed reports of women's experiences. If

memory problems were widespread in this study sample, it would significantly decrease confidence in our results. However, the women who participated in this research project reported very high confidence in their memory for their cancer diagnostic consultation. This is consistent with other research involving cancer patients (e.g., Peteet, Abrams, Ross, & Stearns, 1991) and supports the notion of a "flashbulb" memory phenomenon, wherein people have extraordinary recall of traumatic or highly emotional events in their lives (Brown & Kulik, 1982).

Another potential study weakness lies in its reliance upon self-report in the measurement of physician behavior during the diagnostic consultation. Clearly, it would be important to examine the relationship between more objective indices of physician behavior, such as those derived from observational data, and indices of subsequent adjustment. However, it should also be noted that what is likely critical to subsequent adjustment is a woman's perception of her physician's behavior and not necessarily the behavior, itself. Reliance upon subjective or objective indices of physician behavior alone is likely to yield an incomplete perspective.

In contrast, when taken together, findings from subjective and objective studies of physician behavior during the diagnostic consultation might yield important implications. For example, our study used subjective ratings and demonstrated that cancer patients who perceived their physician to be more caring during the cancer diagnostic consultation tended to have better long-term psychological adjustment. Future research involving both subjective and objective measures of physician behavior may show that patients' perceptions of physician caring and interpersonal skills are significantly impacted by actual physician behavior. Together, these findings would suggest that rates of patient psychological maladjustment following cancer might be decreased by enhancing

physician behaviors that patients view as "caring" during important communication interactions, such as the cancer diagnostic consultation.

There are probably many ways to increase the likelihood that physicians will exhibit caring behavior during diagnostic consultations. Campbell and Sanson-Fisher (1998) spelled out a detailed, five-step approach to changing physician behavior in terms of "bad news" disclosure. They advocated the need for: (1) the establishment of clear, professional guidelines on conducting diagnostic consultations, (2) the widespread dissemination of the guidelines, (3) provision of performance-based feedback for physicians, (4) incentives to physicians to provide best practice care, and (5) active exploration and remediation of obstacles to high quality care in the diagnostic consultation. One such obstacle to physicians conveying emotional support to patients during the diagnostic consultation could be their general skill deficits in the interpersonal and psychosocial domains. Perhaps it will be important to improve physicians' formal training in communication and interpersonal skills and in the psychosocial aspects of health and illness. For physicians in training, this could be incorporated into the medical school curriculum and residency programs. For physicians in practice, training might be done through brief courses or workshops addressing these issues. Two recent studies demonstrated the efficacy of such interventions (Fallowfield, Lipkin, & Hall, 1998; Hulsman, Ros, Janssen, & Winnubst, 1997). Other methods for improving physicians' caring behavior may require change at a systems level. For example, changes in health care administration (e.g., managed care) that lead to decreased time pressures and emotional stress levels for physicians might be indicated, since these factors are likely related to physicians' capacity for displaying caring behavior toward their patients. Although this list is by no means exhaustive, it represents some of the

clinical implications that may follow from continued research in the area of "bad news" communication in cancer care.

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Table 1

Descriptive Data for Psychosocial Variables

	M	SD	Obtained range	Possible range
CDIS Total	68.27	17.47	28-90	18-90
CDIS Caring	18.13	5.70	5-25	5-25
CDIS Competence	14.80	4.85	4-20	4-20
CDIS Understanding	11.16	3.40	4-15	3-15
HADS-Anx	7.83	4.96	0-21	0-21
CES-D	13.30	11.78	0-58	0-60
PCL-C	32.33	13.80	17-79	17-85

Table 2

Intercorrelation of Demographic, Clinical, and Psychosocial Variables

	Variable												
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Age (1)													
Income (2)	.04												
Time since dx (3)	.08	-.23											
Disease stage (4)	-.06	-.48**	.15										
CDIS-Total (5)	.09	-.13	.05	-.05									
CDIS-Caring (6)	.09	.03	.00	-.07	.89**								
CDIS-Competence (7)	.15	-.05	.02	.06	.87**	.71**							
CDIS-Under-Standing (8)	.07	-.13	.11	-.02	.77**	.57**	.53**						
DC-Mem (9)	.07	-.15	-.01	.12	-.05	-.03	-.05	.03					
DC-Sat (10)	-.06	-.23	.15	-.01	.77**	.56**	.55**	.63**	-.02				
HADS-Anx (11)	-.17	-.37**	-.22	.06	-.11	-.25	-.11	-.19	.05	.01			
CES-D (12)	-.25*	-.41**	-.12	.09	-.09	-.28*	-.15	-.07	-.02	.09	.80**		
PCL-C (13)	-.29*	-.36**	-.22	.04	-.22	-.32*	-.22	-.28*	.05	-.05	.87**	.79**	

* $p < .05$
** $p < .01$

Table 3

Beta Weights and Summary Statistics for Hierarchical Multiple Regression Analyses Predicting Psychological Adjustment

	Outcome Variable		
	HADS-Anx	CES-D	PCL-C
Step 1:			
Age	-.13	-.22	-.24*
Income	-.52**	-.52**	-.51**
Time since diagnosis	-.31*	-.21	-.27*
Disease stage at diagnosis	-.15	-.14	-.20
ΔR^2	.28	.29	.30
F Change	5.38**	5.56**	5.81**
Step 2:			
CDIS Caring	-.25	-.34*	-.25
CDIS Competence	.16	.08	.10
CDIS Understanding	-.17	.06	-.21
ΔR^2	.08	.07	.12
F Change	2.05	1.90	3.46*
Total Model:			
R^2	.36	.36	.41
F	4.13**	4.15**	5.25**

* $p < .05$
** $p < .01$

Note. Beta weights shown are for full, seven-variable model.

Table 4

Beta Weights and Summary Statistics for "Best Fit" Multiple Regression Analyses Predicting Psychological Adjustment

	Outcome Variable		
	HADS-Anx	CES-D	PCL-C
Age	--	-.20	-.22*
Income	-.45**	-.45**	-.40**
Time since diagnosis	-.32**	-.21	-.30*
Disease stage at diagnosis	--	--	--
CDIS Caring	-.23*	-.25*	-.29**
CDIS Competence	--	--	--
CDIS Understanding	--	--	--
R^2	.30	.33	.36
F	8.06**	6.88**	7.83**

* $p < .05$
** $p < .01$